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A Weekly Record of Progress in Plumbing, Heating, Ventilation and all Matters Pertaining to Domestic Sanitation

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SERVICE THE WATCHWORD DURING NINETEEN-EIGHTEEN.

SERVICE will be the slogan of the nation during the coming year. The time-honored institution known as New Year's Resolutions will be dedicated to the proposition of service. Its value will be appreciated as never before, its significance will be fully emphasized by all who have the best interests of the nation at heart. Service and patriotism will be one and the same thing. Service will, therefore, be the keynote of the 1918 New Year's Resolutions.

Service of an intensive kind will win the war. It will preserve our home industries. It will maintain industrial efficiency and harmony, while our armies are operating against the enemy.

Business men of every degree will be anxious to render service in order that the industrial fabric of the country may be firmly held together. Men engaged in the building industry will be desirous of continuing and giving more service in order that necessary construction operations may not be unwisely curtailed.

Building contractors and men of the plumbing and heating crafts are prepared to render their full measure of service in every community during the coming year. If they find that, in some sections of the country, their opportunities to give this service has decreased owing to high prices of material and labor, it will become necessary for contractors to educate and convince house-owners, who have tenants, that it will be to their interest to go ahead with plans for remodeling and overhauling, so that tenants, whose rents have been raised, may not become dissatisfied with the heating and plumbing service, which may be deficient in various respects.

House-owners can be shown that lack of service of this kind will compel tenants to move into other apartments, where such service may be obtained and at the same rental.

Hence the prudent landlord, bent upon retaining his tenants and who doesn't wish to incur further financial losses by having apartments unrented for a month or two, will see the wisdom of the plumbing and heating contractor's point of view, when he recommends that the necessary plumbing or heating repairs or alterations should proceed in spite of high prices. The wisdom of the contractor's suggestion is obvious, because it is cheaper for the house-owner to engage the services of the contractor at the present prices than suffer the losses which would follow in the wake of dissatisfied tenants.

The curtailment of new building operations in many communities will no doubt prove a hardship to contractors, who have given much service in this line of construction work in the past, and who are now concerned about the prospects for 1918.

They will be anxious to keep the pulse of their business activity as healthy as possible. But if building operations continue to decrease, then what are they going to do about it? Are they going to lie back on their oars and simply lament the turn of things, or are they going to endeavor to inject something into the pulse to revive the business?

"Domestic Engineering" will be glad to co-operate with plumbing and heating contractors who are confronted with business problems of this kind. If they feel that the opportunities for constructive service are going to become less, they will be interested in ways and means of stimulating a demand for this service. Future articles in "Domestic Engineering" during the coming year will contain suggestions along this line which may prove of practical value.

The FLOW *of* STEAM *and* VAPOR

Some Common Errors Which Reduce Efficiency and Cause Trouble

By Alfred G. King

THE flow of steam, vapor, water, or any other gas or liquid is retarded by friction and obstruction. In the preceding article on this subject we called attention to a number of pipe connections and conditions, which will reduce the effectiveness of a pipe conveying steam or vapor for heating purposes. When the movement of gas or liquid is through a pipe each lineal foot of travel adds to the amount of friction, and the same may be said of each tee, elbow, valve or other fitting employed. Elbows are required to change the direction of a pipe, also tees for supplying and connecting the

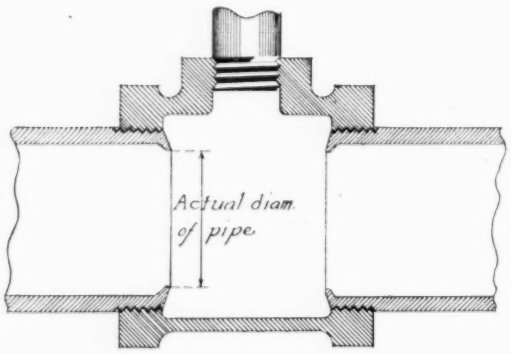


Fig. 1.

various branch pipes and valves to shut off the flow of the liquid or gas. These fittings must be employed for the purpose stated and therefore the friction caused by their use should always be considered when planning the piping system of a heating apparatus. It is the lack of appreciation of facts of this character, or the carelessness of the steam fitter in applying them, that most frequently cause trouble or failure. In the previous article we touched upon some features contributing to the securing of good results from the use of a heating system and referred briefly to friction and poorly designed piping. The main is without doubt the most important part of the piping system, and the greatest care should be exercised in determining the size required for any certain work.

Experienced steam fitters and heating men are alive to this fact and plan and construct their work accordingly. The inexperienced fitter, or possibly we might better say the fitter, who has the opportunity to install but few heating jobs each season, is the man who most frequently experiences the trouble, resulting from ignorance of the proper methods and requirements.

As an example, suppose a fitter has a 15-radiator, low-pressure, gravity steam job to install, requiring 850 square feet of radiation. The basement, in which the boiler and piping is to be placed, is low, and it is probable that the end of the main will be very near to the water line. To determine the size of main suitable for the work (a circuit job) the fitter turns to some one of the published tables, giving sizes of steam mains for various requirements. He finds in the table that a 3-inch main is rated to supply from 750 to 900 square feet of radiation and as the job in hand has only 850 square feet to be supplied, which amount is well within the maximum listed in the table, a 3-inch main is selected for the work, and he thereby invites all kinds of steam fitter's troubles.

It is quite probable that the capacities, given in the table, are based on 100 lineal feet of pipe, a 2-pound, or possibly a 5-pound boiler pressure and a pressure of 1 ounce, at the end of the pipe, and therefore, the amount of radiation supplied should be reduced, if the main is extended beyond 100 feet in length. We shall assume that the length of the main required for this particular building is 150 feet.

It is also quite probable that the capacities given are for a straight pipe, whereas we may assume that this installation is for an L-shaped building, requiring seven elbows for turns or change of direction in the main, and that ten tees are required on the same to supply the necessary number of branches. Each fitting or valve placed in the main will cause a certain amount of friction equalling that caused by a certain number of feet of pipe, and this should be considered in determining the length of main. For each 90-degree elbow the length of 40 diameters of pipe should be added, or 40×3 inches, which is 120 inches or ten lineal feet of pipe, therefore, for seven elbows 70 feet should be added to the length of the main. In a like manner the friction caused by the tees should be added. For each tee 50 diameters of the pipe or 150 inches (50×3) should be added. This equals 12½ feet

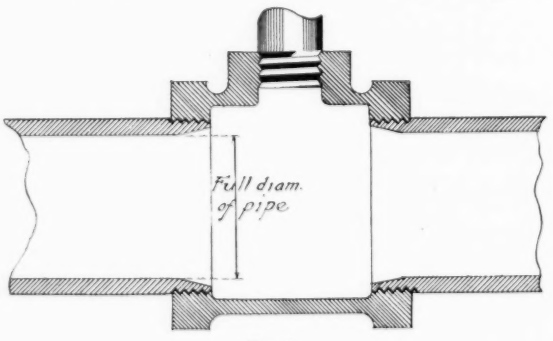


Fig. 2.

of pipe for each of the ten tees or an addition of 125 feet in all.

To properly make use of the table mentioned we now have 150 feet (actual length of main)+70 feet (allowance for elbows)+125 feet (allowance for tees) or the equal

of a straight 3-inch main 345 feet long. If the fitter again turns to the table he no doubt will find that a 3-inch main, 350 to 375 feet long, is rated to supply from 300 to 450 square feet of radiation, and therefore a larger main must be selected for this particular job.

Now let us consider the proposition from another angle—that is, the allowable pressure drop at the end of the main. Assuming that the table referred to is based upon a pressure drop of 1 ounce at the return end of the main, and that due allowance has been made for the friction caused by fittings in determining the figured length of the same, the return end of it can be within 4

Size of Main—100 Lineal Ft. of Straight Pipe. Radiation Supplied with Various Drops in Pressure at End of Main.

Size of Pipe, In.	Drop in Pressure 1 ounce sq. ft.	2 ounces sq. ft.	4 ounces sq. ft.	8 ounces sq. ft.
1½	100 to 140	150 to 200	225 to 300	300 to 450
2	150 to 300	225 to 450	350 to 550	450 to 800
2½	350 to 550	475 to 750	700 to 1100	900 to 1500
3	600 to 900	800 to 1400	1300 to 1750	1600 to 2400
3½	1000 to 1400	1500 to 1900	1800 to 2600	2500 to 3750
4	1500 to 2000	2000 to 2800	2700 to 3500	4000 to 5000
5	2100 to 3500	2900 to 4500	4000 to 6500	6000 to 9000
6	3600 to 5000	4500 to 7500	7000 to 9000	9000 to 14000
	See note *a*	See note *b*	See note *c*	See note *d*

a. Use this table for all one-pipe low pressure gravity steam systems.

b. Use this table for two-pipe gravity return systems or one-pipe systems where good height between water line and end of main may be had.

c. Use this table for ordinary vacuum systems or gravity systems where loss of pressure is not an important factor.

d. Use this table for vacuum systems where condensation is pumped or trapped.

Use table of 2 ounce drop for vapor up to and including a 3-inch pipe. For 3½-inch to 6-inch inclusive use table of 1 ounce drop for vapor.

inches of the water line, which means that the work can be installed in the low basement without placing the boiler in a pit, that is, providing a boiler with an average height of water line is selected for the job. If a greater distance between the end of main and the water line can

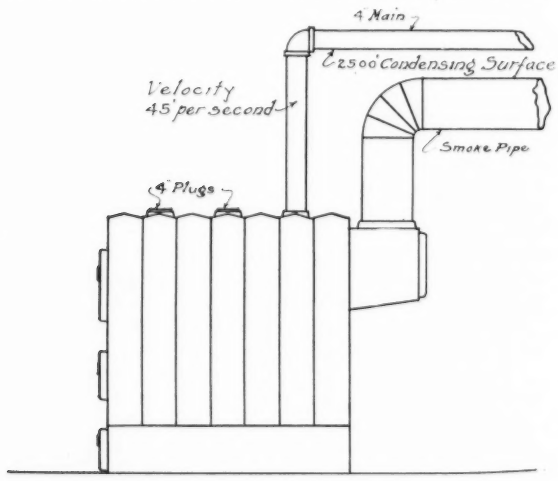


Fig. 3.

be obtained, say 12 inches, the amount of radiation supplied can be doubled or increased to 1,400 or 1,600 feet for 100 lineal feet of straight 3-inch pipe, as the pressure drop can be increased to 4 ounces or ¼ of a pound. In this event the fitter would have been justified in selecting a 3-inch main for the job, as a 3-inch main 350 feet long will supply 900 square feet of radiation with an allowable pressure drop of 4 ounces at the end of the line. If a pressure drop of ½ of a pound can be used requiring a distance of approximately 18 inches between end of main and the water line, the amount of radiation supplied may be still further increased to 1,800 to 2,200 feet for 100 feet of straight 3-inch chain.

In the above example the difference in height of water line is the actual difference in height, owing to difference

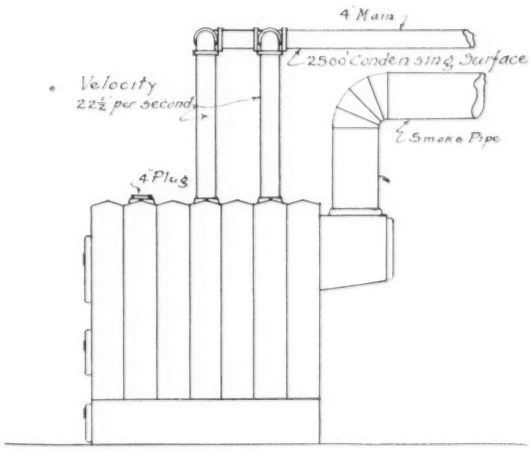


Fig. 4.

in pressure, plus the additional height required to create the necessary pressure to return the condensation to the boiler.

To the inexperienced fitter we would say, obtain a verified table giving the amount of radiation permissible to be connected to mains of certain sizes and lengths with certain pressure drops at the end of the main, and do not forget when laying out work to figure 40 diameters for all elbows and 50 diameters for all tees, which must be used on the same. Should valves be placed in the line add 50 diameters for each globe valve and 30 diameters for each gate valve.

We submit a table herewith showing capacities of steam mains from 1½ to 6 inches in size with pressure drops of 1 ounce to ½ pound. The radiation given in the table is a fair average of capacities as given or recommended by several well known authorities, and this data, therefore, should be a safe guide for the fitter. A general discussion of the sizes of mains to be used under varying conditions would require a consideration of practically every part of each type of heating system. We cite the conditions related to show the danger of blindly following various data and tables. By this statement we do not mean to infer that tables are without value. On the contrary we recommend the generous use of tables rather than the attempt to arrive at results by the use of formulas. The fitter who gets together a number of good tables giving data as to size and capacity, etc., *and learns to properly use them*, is saving the time required to perform intricate and lengthy calculations, in which errors are common and results uncertain.

Every obstruction which interferes with the flow of the steam, vapor or water should be removed, if it is possible to do so. For instance, few fitters realize the importance of reaming the ends of all pipes used in the construction of a heating system. The ordinary roller pipe cutter squeezes the metal to such an extent that a very prominent burr is formed on the inner edge of the pipe, restrict-

ing the area as well as forming a shoulder which causes friction and reduces the velocity. Fig. 1 shows a cross section of a tee into which two pieces of unreamed pipe are screwed. This burr is most noticeable on pipe of small sizes. On ⅜-inch and ½-inch pipe the burr is frequently of such extent as to reduce the area one full pipe size. Fig. 2 illustrates how the full area is obtained by reaming the ends of the pipe, and how the friction caused by the burrs is thus eliminated.

Suppose that the size of main is determined from a table based upon the allowable velocity of steam for that particular size of pipe. Any interference with the flow causes friction and reduces the velocity with the result that a greater pressure must be carried to properly circulate the steam. The pressure at the end of the main is lessened, causing a greater pressure drop and therefore the distance between the end of the main and the water line must be increased. This is one of the reasons that the water leaves the gauge glass of the boiler, as soon as a slight steam pressure is developed.

We have mentioned "allowable velocities." High

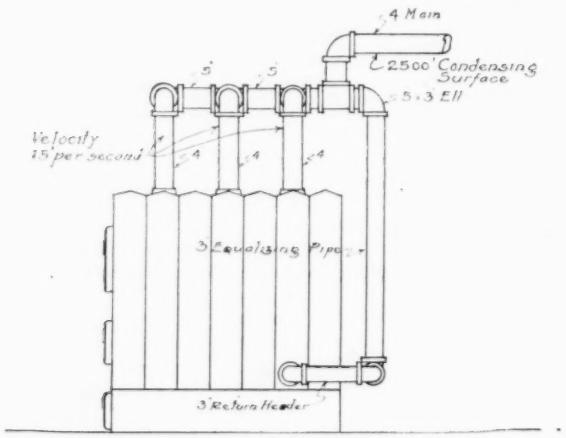


Fig. 5.

velocities are not allowable in a low-pressure steam system, although a greater velocity is allowable in the main than in branches or risers. The velocities obtained by the D'Arcy and Unwin (or Babcock) formulas are slightly higher than those recommended by engineers of a later period.

The Kutter formula is much used and is found reliable for low-pressure steam heating. The velocity of the flow in a steam main figured for 1 ounce drop in pressure at the end of 100 feet of straight pipe is given as follows:

1½-inch pipe 17.5 feet per second.
2 -inch pipe 21.8 feet per second.
2½-inch pipe 27 feet per second.
3 -inch pipe 31.6 feet per second.
3½-inch pipe 35.6 feet per second.
4 -inch pipe 39.8 feet per second.
5 -inch pipe 47.8 feet per second.
6 -inch pipe 55 feet per second.

For branches and risers there is a limit to the velocity which will permit the return of the water of condensation against the steam. The velocity in up-feed, one-pipe risers should not be greater than 15 feet per second for risers of from 1 inch to 2 inches in diameter, and the branches are made one size larger than the risers to still further reduce the velocity in them. With a high velocity of steam in the riser the friction of the steam against the returning water of condensation splits it into small drops in which condition it is carried upward with the steam.

On low-pressure work of any considerable size it is better, if possible, to run the main overhead at the top of the building and serve the radiators or coils by drop feed risers. The steam and condensation is then traveling together in the same direction and the velocity of the steam assists the condensation to the drip point.

Many low-pressure jobs with the piping nicely proportioned and erected have been made unserviceable, because the outlet velocity of steam at the boiler has not been considered. The outlet velocity at the boiler should be less than one-half of that in the main if a steady water line is to be had. If this outlet is restricted, or made the same size as the riser connecting the main, the velocity of the steam leaving the boiler is quite apt to pick up the boiling, emulsed, and therefore lightened water and carry it into the main.

Fig. 3 shows a 4-inch main connected to boiler in this manner. Assuming that 2,500 square feet of condensing surface (radiation and piping) is connected to the boiler, the velocity of the steam in the 4-inch upright connection is 45 feet per second. Connect the boiler to the main with two 4-inch risers, as shown by Fig. 4, and the velocity is reduced one-half or to 22½ feet per second or, better still, use three 4-inch risers, as illustrated by Fig. 5, and reduce the velocity to 15 feet per second. The method illustrated by Fig. 5 also shows an equalizing pipe connecting the steam header to the return header. This style of connection and the low velocity in the uprights from the boiler insures dry steam in the main and a steady water line.

Melting Babbitt Metal.

When melting babbitt metal in a kettle the surface of the metal always should be kept covered with powdered charcoal and the temperature of the bath should be maintained at approximately 500 deg. C. Before being ingoted, this temperature should be lowered somewhat for both lead and tin base alloys and 450 to 470 deg. C. will be found to be a good pouring temperature.

When the babbitt is being run directly into bearings, the shell should be heated to about 100 degrees to prevent blowholes. A Brinnell hardness of 23.5 for lead base and 30 for tin base alloys is considered best.

A Long Wait in Some Latitudes.

"Patience and perseverance will accomplish all things," was the favorite saying of an old farmer.

He had just made this remark in a train one day on the way to market, when a pompous individual in the next seat turned to him and said:

"Nonsense," sir! I can tell you many things which neither patience nor perseverance can accomplish."

"Perhaps you can," said the farmer, "but I have never yet come across one thing."

"Well, then, I'll tell you one. Will patience and perseverance ever enable you to carry water in a sieve?"

"Certainly."

"I would like to know how."

"Simply by waiting patiently for the water to freeze."—Topeka State Journal.

Within the Law.

"See here, waiter, the ice in this lemonade is all melted."

"Yessah; we ain't allowed to serve only sof' drinks, sah."—Boston Transcript.

SOMETHING ABOUT WATER

Difference Between Hydrostatic and Dynamic Pressures—Friction and Its Effect on Pressure—Necessity of Reaming Pipes

By John H. Perry

Chapter II

IN Chapter I, which appeared in last week's issue of "Domestic Engineering," we considered that peculiar property of water, which makes it expand when heated, and makes it burst pipes, boilers, etc., if provision is not made for the expansion.

We showed how plumbers make such provision with relief valves, pneumatic tanks, air chambers, etc., all of which is useful information as far as it goes. But something more useful, something that really makes plumbing possible, is water pressure—or hydraulic pressure, as it is often called.

All through the plumbing trade, plumbers are every day working on something, which is affected in one way or another by hydraulic pressure.

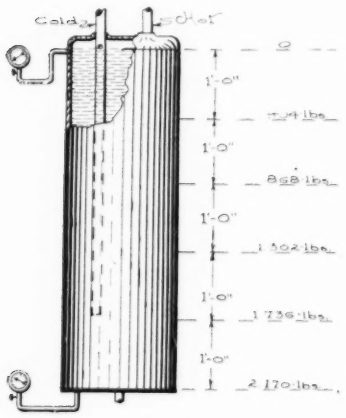


Fig. 1.

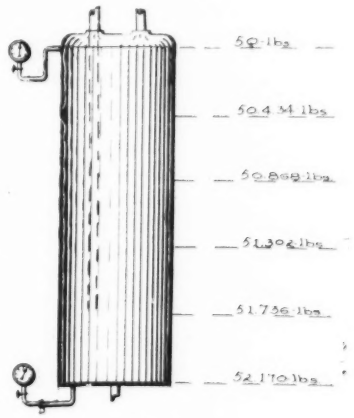


Fig. 2.

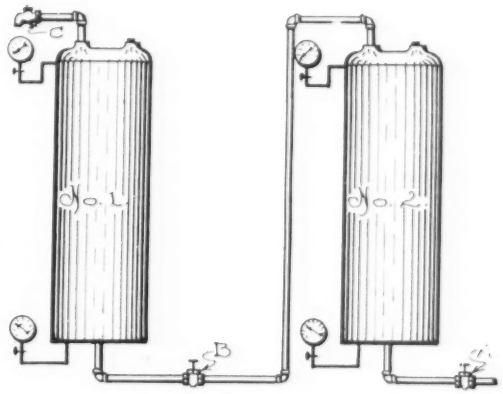


Fig. 3.

If plumbing were warfare and plumbers were soldiers, hydraulic pressure would be termed their greatest enemy. It is a persistent and insidious enemy. It operates against plumber's work day and night. If a plumber has left a weak spot in his work that enemy will find it and drive through. And it will continue to pour through that gap till the plumber brings up his powerful machine and stops it.

"Why should water act that way?" you ask. "Why does it not just flow along in a decent way and not take every opportunity to give trouble?"

The answer is simple—that's its nature and it can't help it.

"Well then," you insist, "what is the powerful machine which the plumber brings to bear to curb and control the troublesome and treacherous element?"

The answer again is simple—just knowledge, and the practical application of tools and materials—that's all. The former goes by the name of theory, usually the latter goes by the name of practice. Proficiency in either one without proficiency in the other will not qualify a plumber to conquer hydraulic pressure and make it his obedient servant. He must be proficient in both theory and practice.

In very plain words, I mean that a plumber, who is just a practical plumber and has not studied the theory of plumbing, is not a full-fledged plumber. He is not master of the situation. He can conquer water pressure only in an elementary way. He can screw pipes together, etc., so they will be water-tight, but can he conquer it by pumps, traps, regulators, ingenious valve constructions, water motors, jet ejectors, etc.? Not much, unless he is acquainted with the laws of hydraulics and hydrostatics and knows the theory of plumbing as well.

So in this chapter we will say something about these laws; it may not be much, but if it is only an entering wedge into the great science of hydraulics, it may help somebody.

Water is a liquid that is composed of molecules, which easily change their positions with relation to each other. The molecules slide over each other, so to speak, with great agility. In molasses and tar they slide with greater difficulty and a slower motion. In glaciers they slide very much slower, but still they slide, for it is well known that glaciers, although entirely composed of solid ice, do flow down mountain sides very slowly. The difference in the motion of water and glaciers, both of which are composed of the same elements, is due entirely to the ease with which the molecules slide over, or from under, each other. This is known in scientific text books as the "viscosity" of a fluid.

This is what permits water to run in the direction of least resistance always. But the thing that compels it to

run, or flow as we call it, is pressure. The pressure may be its own, or it may be applied to it by some other force, such as a pump.

Water pressure may be divided into two kinds—namely, static and dynamic. Both together are known to the trade generally as hydraulic pressure. Let us first consider static pressure, or hydrostatic pressure, as it is more correctly called, for hydro means pertaining to water.

Fig. 1 shows a range boiler full of water up to the

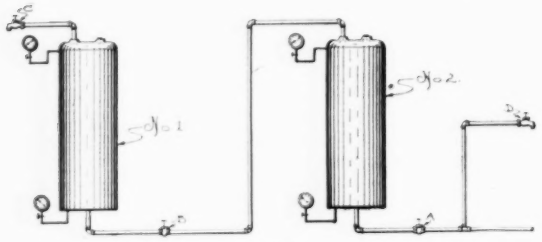


Fig. 4.

vent hole of inner tube. The water pressure is shut off from tank or street main and the pipes are drained empty by the stop and waste cock. There is therefore no pressure at top of boiler except that of the atmosphere which is not included in hydraulic pressures.

The height of the boiler is 5 feet. If gauges were screwed to boiler at top and bottom as shown, the top gauge pointer will stand at zero, while the pointer of lower gauge will indicate a little over 2 pounds of pressure.

If you think the gauges are at fault just change them, using the lower one on top and upper one at bottom. If the gauges register anywhere near right, you will observe that the top gauge indicates zero, and lower one full 2 pounds.

This proves that the gauges are right and that something outside of the gauges has created a higher pressure at bottom of boiler than at the top.

Some plumbers may think that because the street or tank pressure has been shut off there is no pressure in the boiler, or, if any, it is the same all over. This is an error. The pressure at the bottom is always more than at the top, whether the street pressure is turned on or not. The pressure difference between top and bottom depends only on one thing; that is, the depth of the water in the boiler. Being exact, it is .434 pounds on the square inch for each foot in depth of the water. This is a well known factor among engineers. The pressure at bottom therefore is 5 feet×.434 pounds=2.170 pounds. That rule holds good for any cold water calculation where the water is not in motion. This is the rule to find the static pressure.

The dynamic or hydraulic pressure is different. It can be measured by a gauge, but not by any fixed rule. It is the static pressure less that which is lost by friction, etc., as the water flows through pipes, etc., or otherwise loses its pressure.

In Fig. 1 note that there is no pressure in top of boiler because the water is shut off and pipes are empty. Suppose the street pressure is turned on again while the gauges still remain screwed to boiler. Then it will be found that the pointers of both gauges move around exactly the same distance, indicating that the pressure has been raised exactly the same amount at both top and bottom of boiler. Suppose the street pressure is 50 pounds then upper gauge will indicate 50 pounds and the lower one slightly over 52 pounds, as shown in Fig. 2. The 2 pounds' difference is due only to the weight of water in the boiler, the pressure of 50 pounds is due to the hydraulic pressure in the street mains.

The 2.170 pounds pressure difference in the boiler will never change materially, no matter how much water is being used in the house, nor how much variation there is in the street mains, because it is purely a static pressure. The 50 pounds, or working pressure, will, however, change materially.

Now we will show definitely the difference between static and working pressures. Suppose the two boilers, in Figs. 1 and 2, are piped up to a street main as in Fig. 3, and, for convenience, numbered 1 and 2. Turn on valves A and B, also faucet C. Water rushes into No. 2 boiler and fills it. The air in No. 2 boiler is blown out through No. 1 boiler and the faucet. As soon as No. 2 is filled the surplus water rushes through B into No. 1 boiler, pushing the air of this boiler out through the open faucet. As soon as water comes from faucet we know both boilers are full and all the air has been blown out. Now close faucet C, but leave valves A and B open. Then we find that the full pressure of street main is in both boilers. We also note that the two upper gauges both read exactly the same, while the lower gauges also read the same, only they are both 2 pounds higher than the upper gauges. Of course, we can account for the

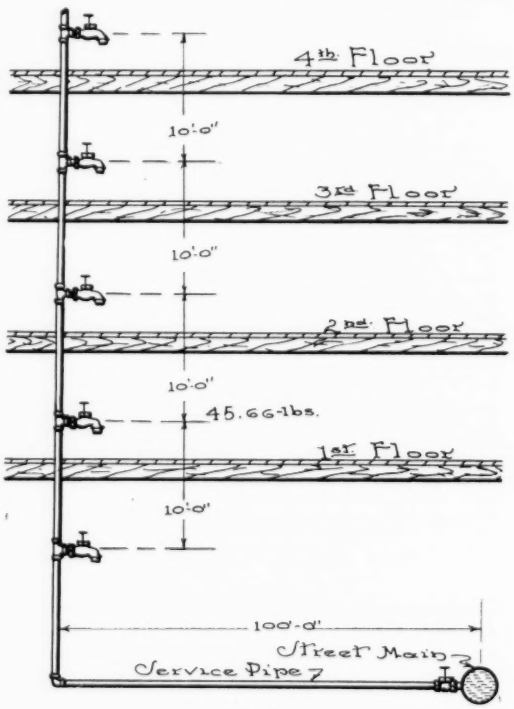


Fig. 5.

two pound pressure difference in each boiler, because it has already been made clear in reference to Figs. 1 and 2.

Since faucet C is closed, it follows that no water is flowing through the boilers or the pipe connections. Therefore the contained water is at rest. It is in a static condition, and the pressures we now read on the gauges are called static pressures, as far as the service pipe and connections are concerned. Suppose the two upper gauges read 50 pounds each, and lower ones 52 pounds each. This means that the street pressure, as far as the boilers are concerned, is about 50 pounds.

Now open faucet C full. It will be seen that all the

gauges instantly drop. The two gauges on No. 1 boiler will drop more than those on No. 2 boiler. Perhaps No. 1 boiler gauges will drop to 20 and 22 pounds, while No. 2 boiler gauges drop to 25 and 27 pounds, the lower gauges in both boilers still remaining 2 pounds higher than their respective upper gauges. Shut the faucet and all gauges return to their original pressures.

Now the questions come up: "Why does the pressure drop in both boilers? Why does it drop more in No. 1 than in No. 2, the street pressure remaining the same?"

The answer is that a portion of the force of the water was spent in overcoming the friction in the pipes, and in producing the flow. When water is not running there is no friction to be overcome by the force or pressure of the water, therefore the full pressure is exerted, when the water is at rest. To push the water through the pipes, however, requires force and this force is only obtainable from the water's own pressure. That accounts for the pressure reduction in both boilers, when faucet was running.

But to account for the greater pressure drop in No. 1 boiler than in No. 2, examine Fig. 3 again. There you will see that the pressure in No. 2 boiler equals street pressure less resistance in Pipe A The pressure in No. 1, however, equals street pressure less resistance in pipe A, resistance at boiler, and resistance in pipe B.

So it is quite evident that when water is drawn at C, there must be a difference between the pressures in the boilers shown in Fig. 3.

If, however, a faucet is supplied from the service pipe, before it feeds the boilers, as shown at D in Fig. 4, the results will be entirely different. When faucet D is opened, C remaining closed, and A and B remaining open, the pressure in both boilers will instantly drop as before, but it will drop the same in both boilers. Suppose street pressure is still 50 pounds, then on opening D both boilers may drop to 30 pounds more or less. But whatever it is, it will be the same in both boilers. The resultant pressure will be original pressure less friction between branch E and the main. There being no flow

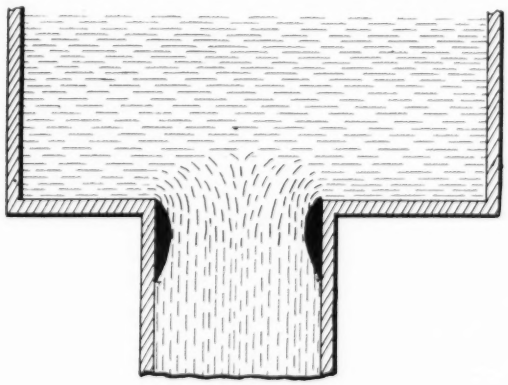


Fig. 6.

between branch E and the boilers, it follows that both boilers and all piping from E to C are in a static condition, while that part of the system between street main and faucet D is in a dynamic condition. That is the only part where pressure is lost by friction.

Now let us follow this matter of water pressure to some definite practical conclusion. Let us see how it affects plumbing. Then let us see how plumbers can and do master it.

Suppose we run a ¾-inch service pipe to a four-story building. The street pressure is 50 pounds. The service pipe is, say, 100 feet long. Each story is 10 feet high. The service pipe feeds a riser with a faucet screwed into it at each floor, as shown in Fig. 5.

When static conditions exist, the pressures at each floor are as shown in the figure. This allows 4.34 pounds for each story. The pressure at top floor is 32.64 pounds, which is enough for good service there.

But if the faucet on first floor is opened full, the pressure in rising line instantly falls. It will be equal to original static pressure less loss by friction in service

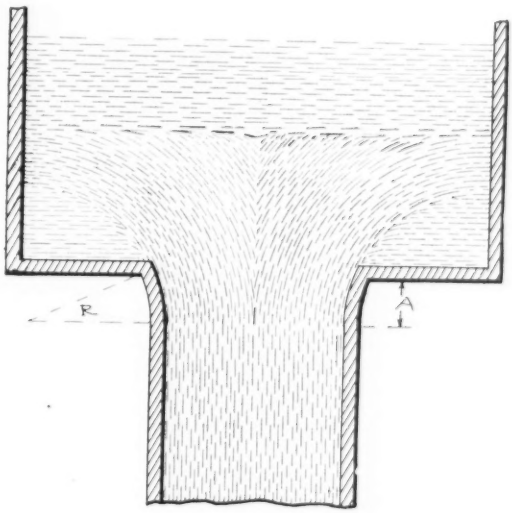


Fig. 7.

pipe from main to first floor faucet. This loss will depend greatly upon the size of the service pipe, the corporation cock and the free or corroded condition of the piping. Suppose it is all ¾-inch pipe and very much corroded, the friction loss may exceed 25 pounds.

Suppose it is exactly 25 pounds, then the resultant pressure at top floor faucet will be 32.64 less 25, equals 7.64 pounds. This is enough to produce a gentle flow at top floor faucet, and probably no complaint might be made by the occupants of top floor on this account.

But should somebody open the second floor faucet while first floor faucet is running, then the resultant pressure in riser will be very much more reduced, probably to such an extent as to remove all pressure from top floor. Then, of course, no water will run at top floor.

This is no theory. It is actual practice. Experienced plumbers always provide against such emergencies. They put in service pipes large enough to ensure an abundance of pressure at top floor, when lower faucets are opened.

The following table, which is partly an extract from a table compiled by W. G. A. Ellis, C. E., will give an idea of the loss of head in pounds, due to water flowing through a straight pipe.

Column A is gallons discharged per minute.

Column B is velocity in feet per second.

Column C is friction loss in pounds per square inch per 100 feet of pipe.

In connection with this table or any other table, which gives the friction loss in straight pipe only, consideration must be given to the elbows, bends, etc., which impede the flow as surely as does the friction in the straight pipe figured in the table.

In calculations of this nature, therefore, all elbows, etc., must be transposed into straight pipe.

A	½-inch Pipe B	½-inch Pipe C	¾-inch Pipe B	¾-inch Pipe C	1-inch Pipe B	1-inch Pipe C	1¼-inch Pipe B	1¼-inch Pipe C
5	8.17	24.6	3.63	3.3	2.04	0.84	1.30	0.3
10	16.3	96.0	7.25	13.0	4.08	3.16	2.60	1.0
15	.....	.....	10.9	28.7	6.13	6.98	3.90	2.38
20	.....	.....	14.5	50.4	8.17	12.3	5.23	4.07
25	.....	.....	18.1	78.0	10.2	19.0	6.53	6.4
30	.....	.....	.....	.....	12.3	27.5	7.85	9.15
35	.....	.....	.....	.....	14.3	37.0	9.14	12.4
40	.....	.....	.....	.....	16.3	48.0	10.4	16.
45	.....	.....	.....	.....	.....	.....	11.7	20.
50	.....	.....	.....	.....	.....	.....	13.0	25.
75	.....	.....	.....	.....	.....	.....	19.5	56.
100	.....	.....	.....	.....	.....	.....	.....	.....

The friction in a 90-degree bend is considered by some engineers to be equal to about 2 feet of straight pipe for the smaller sizes, say 1-inch and less, about 3 feet for 1¼ and 1½-inch bends, and about 5 feet for 2-inch bends.

A gate valve equals in friction a 90-degree bend. A globe valve equals 10 to 12 bends. A tee fitting equals 2 bends. Unreamed ends of pipes and rusty interiors represent unknown variable quantities.

The loss of head due to change in direction is estimated equal to about 12 diameters of the pipe. Loss due to enlargement of a bend is about 4 diameters. And loss from friction due to length of fitting may be considered as 2 diameters. So when we consider all these things in conjunction with the above table, and refer to Fig. 5, we may surmize that we are not far wrong in believing that water will not be obtainable from fourth floor faucet when lower faucets are open full.

There is one thing that plumbers can do to facilitate the flow of water through pipes, that is, to ream all pipe ends. It is not enough just to remove the burr. The ends should be reamed to a countersunk shape. This is to prevent what is known as the "Vena Contracta," or contracted vein.

Fig. 6 shows the contrated vein formed at the inlet to a pipe at the bottom of a tank. The pipe connects to the tank with an inlet orifice equal to that of the pipe. Just a little inside the pipe, which is receiving its supply

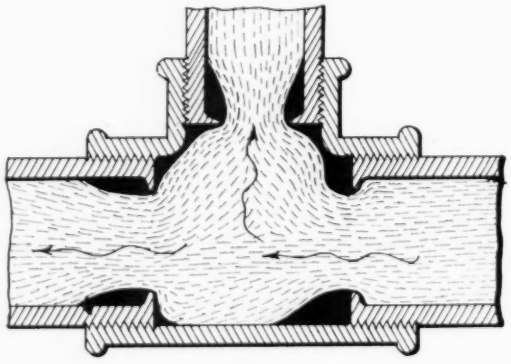


Fig. 8.

from the tank, the current of flowing water becomes contracted in sectional area, reducing to a considerable extent the water carrying capacity of the pipe. To overcome this trouble and to make the pipe convey more water, the inlet should be funnel-mouthed as in Fig. 7. The cone should have a length of not less than 1½ times the inside diameter of the pipe. The radius, R, should equal about 1.25 times the diameter of the pipe.

The loss of head due to contracted veins throughout a plumbing system is difficult to figure. It is estimated that about .2 of the quantity that should pass is lost in a case similar to that indicated in Fig. 6.

This means that if the pipe in Fig. 6 discharges 8 gallons in a given time with a certain head, it will discharge 10 gallons under the same head in the same time, if funnel-mouthed, as in Fig. 7.

Does this information not emphasize the necessity of reaming all pipe ends? If you don't believe it, just look at Fig. 8 and imagine how the water must be retarded by the burrs and contracted veins, which occur in one ordinary tee fitting. See how the contracted veins throttle

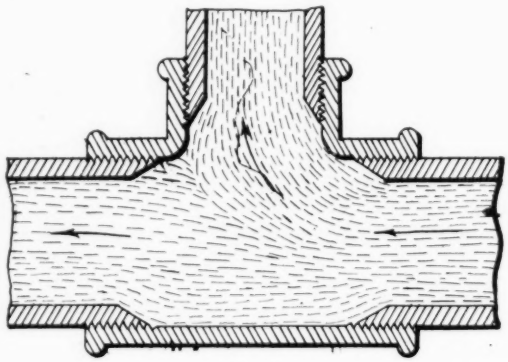


Fig. 9.

down the current. See how the burrs reduce the sectional area. They operate just the same as a half shut stop cock. They prevent the pipes from discharging all the water they are capable of discharging. Now look at Fig. 9. Here the pipe ends are all reamed. The full bore of the pipe is obtained. And the contracted veins are eliminated. This is all accomplished by simply reaming the pipe ends. It does not cost anything to ream pipes—only a little labor. Is it not worth while?

The Plumber's Love Letter.

Andrew Epple, one of the well known plumbing and heating contractors of St. Joseph, Mich., selected a winner when he wooed and won the woman who is now Mrs. Epple. That she has qualified for the life job of better-half to a plumber and fitter, there can be no doubt. She takes as keen an interest in the correct operation of her husband's plumbing and heating business as she does of his, or rather their, home. She keeps a close tab on bills due and overdue, for she is the official accountant in the shop. She is responsible for the attractive appearance of the Epple display window. Mrs. Epple is often inclined to think in the language of plumbing and heating. Recently while planning the Christmas display window, she wrote the following letter, getting her inspiration from the names of fittings used by the trade. It is entitled the "Plumber's Love Letter," and is addressed to "Okum," presumably Miss Okum.

"(Okum) I know you are holding out your (Hooks) to (Trap) me, so don't (Tees) me so.

"My heart is (Hammering) for you and my love is as soft as (Putty) and as strong as (Iron).

"You have opened my heart (Valves) which are (Leaking), so let us (Bolt) and marry anyway, for I know we would make a happy (Coupling)."

The Hawley Pulp & Paper Company will equip its paper mill at Oregon City, Ore., with an automatic sprinkler system to cost approximately $40,000.

Elliott & Barry, of 1426 Olive Street, St. Louis, have secured the contract for installing the heating system in a store building to be constructed at a cost of $20,000 at Collinsville and State Street in East St. Louis.

QUESTIONS & ANSWERS

REARRANGING PIPING AT DOMESTIC BOILERS TO SECURE BETTER HOT WATER SUPPLY.

Editor "Domestic Engineering":—Fig. 1 is a sketch of a two 30-gallon range boiler job, which does not work very well. The range boiler in the kitchen is always cold, as the furnace is about 25 ft. away from it. The owner would like to have me connect the hot water line from boiler in basement to boiler in kitchen, so as to make the hot water feed the kitchen boiler instead of cold from tank. He claims he could save half the gas used on laundry days, as the water is always cold in kitchen boiler, which seems to hinder the boiler in basement from feeding fixtures with hot water. Could you give me an idea as to how it would be best done, and what the result would be, or what had I better do to remedy this job.

Janesville, Wis. F. H.

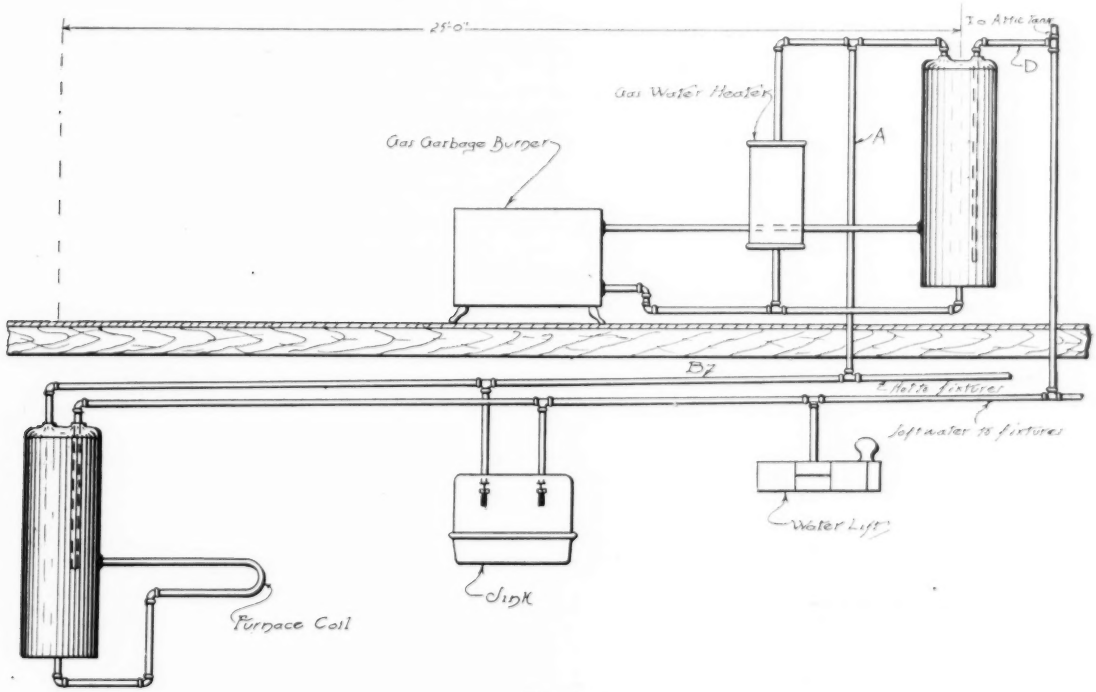


Fig. 1.

The arrangement shown in Fig. 1 is not likely to give satisfaction.

The lower boiler only is heated by furnace, because there is no proper circulation pipe from upper boiler back to lower boiler.

Furthermore, the connections are such that when a hot-water faucet is opened the cold water in upper boiler will flow down pipe A and cool off any hot water which may be drawn up through pipe B. This is the reason why the owner has to burn so much gas to heat the water, even when his boiler at furnace is quite hot.

The garbage burner probably cannot be depended upon to heat the upper boiler very much, as we presume it will not be burning all the time.

To remedy the troubles encountered in Fig. 1 we suggest changing the connections, as shown in Fig. 2. These changes are very simple and inexpensive and will insure an abundance of hot water, providing the water is heated by the heaters.

A separate return pipe, C, is run from bottom of upper boiler to bottom of lower boiler.

A stop-cock, if any, at D, Fig. 1, which feeds upper boiler, must be shut off, so that all the cold water is fed to lower boiler; or the cold water feed pipe to upper boiler and its inner tube, should be removed.

The hot water supply pipe from lower boiler should enter upper boiler at top or side. The hot water supply pipe to house must not draw from this pipe. It must draw from top of upper boiler direct, and must not be connected to lower boiler in any way.

In this way all hot water from all heaters goes to upper boiler, and hot water to all fixtures is drawn from top of upper boiler, which is the hottest spot. If there is any hot water at all in either boiler, it will be found at top of up-

per boiler. This is why hot water pipe to fixtures should take its supply from that point.

The cold water, being fed to bottom of lower boiler only, insures that all the hot water will be pushed out of both boilers before any cold water can be drawn at hot water faucets.

If correspondent changes the connections, as shown in Fig. 2, we are sure he will obtain good results. But he must be sure to use pipes of the sizes given or larger. And he must be sure they are all clear and free from sediment, and properly graded so that there will be no air pockets present to stop the circulation anywhere. If he does not use these pipe sizes, or air traps the piping, he is liable to have trouble.

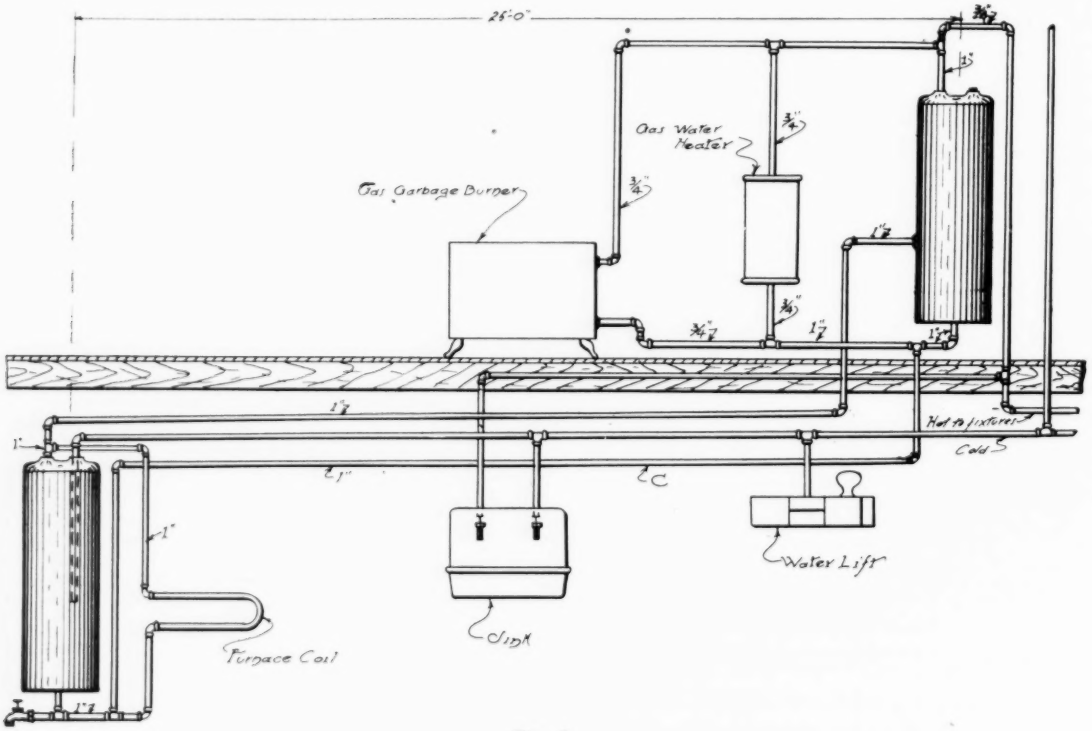


Fig. 2.

WOULD LIKE TO GET MANUFACTURERS' OPINIONS ON RANGE BOILER PROBLEM.

Editor "Domestic Engineering:"—My article, "The Tube in the Range Boiler," certainly has created a stir in the plumbing world, it would appear from the replies that have come to you, and which you have published. There is one thing certain, and that is that the boiler manufacturer, who would make such a boiler, would sell a large number of them, due to the discussion which has been carried on in "Domestic Engineering."

What I would request now is, that some of the boiler manufacturers reply to this article through "Domestic Engineering," as it is as vital to them as to the plumber, which type of boiler is to be used or made. The plumber, being the man who actually installs the material, is the best judge of what is practical. From all the discussion so far, there are very few objections to my plan of the tappings on a boiler, which could be classed as conscientious objections. One point that I did not mention in my article is that the boiler could be set on the floor as the bottom tapping, if there was one, would not have to be used, and many times it is a difficult job to place a boiler in a space where the height measures about the same as the boiler and the stand. By leaving out the stand, the boiler would be lowered at least 1 ft. or more, depending on the type of stand used. I cannot see the value of a boiler stand in the basement in any way. The only thing, it seems to me, the stands are used for, is to raise the boiler stand high enough to get at the bottom tapping underneath the boiler. Some may say the gas heater would then be too low to light, but I believe this could be remedied by setting the heater a little higher without impairing its efficiency.

Detroit, Mich. C. A. Bubb.

INSTALLING A RETURN TRAP.

Editor "Domestic Engineering:"—A steamfitter referred the following problem to me a few days ago, and as several interesting points are found in it, I present them for consideration.

In a steam plant containing one tubular boiler, a return trap was to be installed in order to send the water of condensation due to heating the mill, into the boiler. It is well to remember in this connection, that water enters a return trap until the weight of it operates the mechanism that overcomes boiler pressure. The steam valve is then opened wide, thus drawing the full capacity of the pipe for a short time, then it is suddenly shut off, until the bowl fills again. Nothing less than full boiler pressure will answer the purpose, hence the connection must be made so that steam will be drawn directly from the boiler, or so near to it that the use of steam for other purposes will not reduce the pressure.

Fig. 1 shows the upper part of the boiler with some of the piping. The water column is connected at 2 directly

into the shell, with 1¼-inch fixtures. A tee was available at 3, and the steamfitter proposed to use it in order to save as much labor as possible. As a ¾-inch pipe would be required, I objected to this plan, because the slightest reduction of pressure in the upper connections will result in a false indication of the water level, and it will not be on the safe side either. The glass will show a higher level than really is in the boiler, hence, if it is fitted with a high and low water alarm, it will blow for high water when there is not enough to endanger the engine, and not for low water when the upper row of tubes may be empty. The fact that the outlet is less than the opening from the boiler, does not prevent this action, as a difference of ¼-pound pressure between the upper and lower connections of a water column is sufficient to change the water level more than 6 inches.

The intermittent action of the return trap will cause the water level to fluctuate badly, thus making one or the other whistle blow, when no actual change has taken

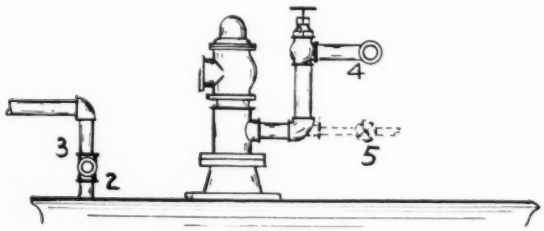


Fig. 1.—The Installation of a Return Trap.

place in the water level. If the column is not fitted with alarms, then those changes will take place without causing attention to be called to them, which would be a dangerous condition.

A steam nozzle carrying a 5x5x2 inch tee is shown on the shell. This carries a 5-inch pop safety valve. The 2-inch outlet is fitted with a nipple and an ell, followed by a vertical nipple and an angle valve. The horizontal outlet carries another nipple and a tee, 4, only one outlet of which is in use. It was proposed to connect the trap to the other outlet, but this was not approved, for the following reason: Steam is taken from this point to feed a small heating system, to supply a pump and run an injector, hence the pressure might be reduced, when the trap valve was opened, which would prevent water from going into the boiler, as full pressure is required for this purpose.

The plan finally approved was to remove the ell and put in a reducing tee, followed by a nipple and a globe valve, as shown in dotted line at 5. This gives a short and direct passage for steam from the 5-inch tee, and full pressure will probably be maintained. If it falls when much steam is passing through 4 to supply the heating system, it may be throttled at the angle valve, as a reduced pressure is sufficient for heat and for the pump. Detailed reasons for these conclusions are given, because they are necessary in order to present the principles involved and to call attention to the need of a due observance of them in every day practice.

New Haven, Conn. W. H. Wakeman.

Easy to buy, convenient to handle, no red tape—Get a War-Savings Stamp today.

Armour & Co. are planning to build a new plant at Knoxville, Tenn., which will include the installation of a large amount of refrigerating equipment.

CADMIUM IN BRASS.

So far as is known, more than one per cent of cadmium in spelter would be detrimental to the manufacture of high-class brasses, particularly those used for cartridge metal or deep drawn stock. On the other hand, it has been shown that less than one per cent of cadium need not be considered as having injurious effects on brass mixture. Cadmium that might remain in the brass and exist as a cadmium-copper alloy or cadmium-zinc copper alloy, would cause the resulting brass to be brittle, and would not admit of the malleable properties that are required in commercial brass.

Small amounts of cadmium in brass are extremely difficult to find. A method suggested by E. Schramm before the American Chemical Society was first tried on known salt mixture and then applied to commercial brasses. This method consists of first partly freeing the nitric acid solution of copper by electrolysis, then precipitating out the rest of the copper, the tin, and the lead by the ordinary method, then adding dilute sulphuric acid to the solution and getting the zinc and cadmium into the form of sulphates. The cadmium is then precipitated out by means of hydrogen bisulphide. The cadmium sulphide after filtering, is converted into the sulphate by treating with sulphuric acid and reprecipitated as the sulphide by using ammonium poly-sulphide according to Noye's method.

January 15 and 16, 1918.—The annual convention of the Wisconsin Master Plumbers' Association, at Milwaukee, Wis., with headquarters at the Hotel Wisconsin.

January 15, 16 and 17, 1918—The annual canvention of the Iowa State Association of Master Plumbers, at Waterloo, Iowa.

January 22, 23 and 24, 1918.—The twenty-sixth annual convention of the Illinois Master Plumbers' Association, in the Sweeting Building, Bloomington, Ill.

February 5, 6 and 7, 1918.—The annual convention of the Ohio State Association of Master Plumbers, at Dayton, Ohio.

May 13 and 14, 1918.—The ninth annual convention of the National Pipe and Supplies Association, at Cleveland, O., with headquarters at the Hollenden Hotel.

IOWA MASTER PLUMBERS ISSUE CONVENTION PROGRAM.

The program for the thirtieth annual convention of the Iowa Master Plumbers' Association, to be held on Tuesday, Wednesday and Thursday, January 15th, 16th and 17th, at the Irving Hotel, Waterloo, Iowa, has just been mailed to men of the craft in the Hawkeye state.

An address of welcome by Mayor W. R. Law, of Waterloo, will be the feature of the opening session on Tuesday morning. In the afternoon business discussions will be in order, and at eight o'clock in the evening a smoker will be arranged. Regular convention sessions will be held at 10 a. m. and 2 p. m. on Wednesday and Thursday. The annual banquet of the association will be held at the K. of P. Hall on Wednesday evening at 6:30. It is anticipated that the convention will be favored with a large and representative attendance of Iowa master plumbers.

THE PLUMBER WHO LOST HIS NERVE

What a Plumbing Supply Salesman Learned From The Sparrows and a Dog

By William Robert Marshall

WILBUR WILSON has been in the plumbing business for about eighteen months. Wilbur, before going into the plumbing business as a master plumber, had worked six years as a journeyman for Travis & Travis, and when they decided to close out the business and retire, they were happily surprised to ascertain that Wilbur had saved enough money to nearly pay for the business at inventory price.

Satisfactory arrangements were then made, and Wilbur invested his money in the establishment and launched out as:

Wilbur Wilson,
Successor To
Travis & Travis
Sanitary Plumbers.

Eighteen months had passed, when Wilbur came in to see me with "something" on his mind.

"Well, Chief," he began, "I have come in for a little talk—a confidential talk—about my business," he concluded, glancing around to see that no one was near enough to overhear him.

"If I can be of service—," I began.

"I think you can," he interrupted. "Anyway I have simply got to talk to some one and I read your stories in 'Domestic Engineering,' and thought maybe you could find some remedy for my troubles."

"They can't be big—trouble is never as big as it appears," I suggested.

"Well, mine look mighty big to me," he answered.

"They generally do until you unmask them."

"As you know," he plunged abruptly into his case, "I bought out Travis & Travis—put in all the money I had saved during six years I worked with the tools."

"Yes."

"Well, I am up against it," he stopped.

"Up against it!" I asked in astonishment.

He nodded his head.

"What do you mean—up against it?"

"I mean, I can't make it go. I can't make enough money to meet the expenses of the place and get a living out of it."

"What do you mean by a living?" I asked.

"Just a living—nothing extra," he stated.

"Um-hah," I meditated. I knew Wilbur was a *good liver,* and I had heard he was rather inclined to play the gentleman, since he had become a master plumber. "Losing his nerve," I diagnozed his case.

"Your job looks pretty big to you," I suggested.

"Pretty big, is correct," he admitted, mournfully.

"I felt that way once, and I want to tell you what cured me," I answered.

"True case?" he asked suspiciously.

"*Gospel truth,*" I assured him.

"Go ahead!" he demanded.

"Some years ago, before coming to California, I sold pottery in the East, and like all men, who sell pottery, I had a lot of competition, so the job wasn't any snap to begin with. There was one big firm in my territory, whose purchases of pottery was a very pretty business, and I had been trying for several years to break in, without any success.

"They always treated me cordially whenever I called, thanked me for calling, but always sent me away *without* an order, on one pretext or another.

"So I was never very optimistic when they wrote in for quotations, something they did every time they had an order to place, which was quite frequent.

"This firm for some reason or another was considered 'easy picking' by my chief, and he couldn't understand why I couldn't get some of the business, but the fact was, I just couldn't do it, that's all.

"Now then, here's the story of the incident which cured me.

"One night in a city far away from the one in which this firm was located, I got a telegram which read: 'So and So. Co. in market for 1,000 combinations. See them at once. Quote regular price. Wire results when through.' Fine chance I muttered, as I read it.

"However, I would go. So early the next morning, in fact, it was so early that the city still slept although the sun was just beginning to make himself felt, as it was in the summer time, I went down the street towards the depot.

"It was a beautiful morning, just such a morning that inspires the feeling that all things are possible in such a beautiful world, but as I went down the street trying to make myself believe that this was the time to get So and So Co.'s order and having a pretty tough time doing it, my attention was attracted by an awful chatter of sparrows.

"Upon looking around for the cause for so much excitement among them, I saw a dog, a medium-sized mongrel dog, dart down the middle of the street. Every once in awhile he would hesitate, side-step and look back at the ten or fifteen little brown sparrows—flying as close as they dared to him, chattering, screaming and swearing at him. As he came abreast of me I saw that he had a young sparrow in his mouth.

"Then I understood. Mama and Papa Sparrow had invited the uncles, aunts and all the cousins to witness Willie Sparrow make his first flight, and Willie Sparrow's engine had stopped in midair or he had struck a dangerous

wind pocket and volplaned to earth, only to be grabbed up by the dog, who had evidently been anticipating the accident. Goodbye Willie was my first thought, as the dog dashed past me. Your a dead bird, but imagine my surprise, as the dog stopped and dropped Willie Sparrow on the pavement unceremoniously and stood at bay against an army of Papa and Mamma Sparrows.

"They had cut him off—headed him in—flanked him—attacked him in the rear—over him and under him, they flew chattering, scolding and pecking at him, until the dog was in danger of becoming cross eyed and dizzy trying to watch the point of attack.

"The Dog finally gave up and, with his Tail between his Legs, hot-footed it for more congenial Territory, panic-stricken and completely routed."

"In the mean time Willie was making his getaway—a little stiff—but a long ways from being a dead one.

"The dog bewildered and probably disgusted with himself, started up a side street, stopped and looked back; in a second the sparrow army was after him, the dog finally gave up and with his tail between his legs—hot footed it for more congenial territory, panic stricken and completely routed.

"*When I saw that*—a few small sparrows tackling a proposition a hundred times their size and getting away with it—I said to myself, 'Gee whiz, that's nerve for you, in face of overwhelming odds and almost certain defeat.' And, Wilbur, I went *after* that order—instead of going to *visit* with it, and I got it, and ever since, whenever I bump up against anything that looks like trouble, I always remember the dog and the sparrows.

"Maybe your trouble looks as high to you as that dog did to the sparrows, Wilbur, but you can lick him if you have got the nerve."

"Gee, that's a bum story," Wilbur offered as he reached for his hat, but Wilbur is a bright chap, and I know from the look in his eyes that he got it—hard.

Try This.

She was waiting for him.

Gathering her brows like gathering storm, nursing her wrath to keep it warm, and when he entered the room she began:

"This is a nice time of night—"

"I—er—know I'm late," he hastily interrupted, "but I couldn't help it, my dear. Club had—er—big discussion, on female beauty."

"And what had you to do with that?" demanded the fretful wife.

"More'n any one there. I was the one—er—who had the most beautiful wife, an'—er—course, the best authority on female beauty, an'—"

"Why don't you take off your overcoat, Henry? Let me get your slippers for you. It's awful cold outside; I think you must be half-frozen."

Half a minute later Henry was safely ensconced in his easy-chair with his wife at his feet putting his slippers on.—"Philadelphia Inquirer."

Better than money because they earn money; buy a War-Savings Stamp Today.

TURNING BOOK ACCOUNTS *into* CASH

By J. S. Vogel

BOOK accounts, good, bad and indifferent, are a thorn in the flesh of many plumbing and heating contractors. To force collections and at the same time retain the good will of customers is a problem that is not easy to solve. But it has been solved by one master plumber and steamfitter, and this article will tell you how it was done.

This contractor's business is in a medium-sized city in Pennsylvania. Most of his business comes from people who own their own home or are in business for themselves, and while good credit risks, they are slow in paying their bills. This master plumber and heating contractor wanted to collect his accounts and at the same time retain the good will of his customers. He himself did not want to go out collecting, but when occasion demanded he sent his bookkeeper and office salesman out to do collecting. But the office man was not a collector, and about the only good he did was to personally deliver a statement to the customer, taking the money when it was offered him, but never definitely asking that a bill be paid.

This condition of affairs was unsatisfactory and finally reached its climax, when the master plumber himself could not meet his bills.

Under these conditions it was only natural that he should complain of the fact to a salesman from whom he had been buying most of his plumbing and heating supplies. The salesman was one of the wide-awake kind. He knew that the plumber was reliable, but he also knew that of late he had not been meeting his bills as promptly as before. When the salesman handed the master plumber a statement, furnished him by his house, he did so with an apology, saying that it was merely a matter of form, that the credit man of his house did not know existing conditions, etc.

But the master plumber realized the justice of the claim and was not offended when the salesman handed him the statement. Also, he noticed that the salesman was afraid of offending him. Instead of asking him for the money due, the salesman really as much as told him not to pay the bill until convenient.

After a moment's consideration, the dealer turned to the salesman-collector and said:

"You're about as poor a collector as that man of mine. You're afraid to ask for money that is rightfully yours."

Then followed the explanation. The result was that the salesman agreed to talk over the problem with other dealers and with the credit man of his house, to find some way of collecting outstanding accounts and at the same time retain the good will of customers. The salesman agreed to report his findings to the dealer on his next call, which was 30 days later.

That evening the salesman wrote a long letter to the credit manager, telling him in detail the exact conditions, and asking that he find some method that would help the dealer.

It was the credit man's duty to collect the money due his firm—and he had the reputation of knowing how to do it. For that reason the salesman appealed to him.

The result of it all was that the next time the salesman called on the dealer, he had a definite plan to suggest. To collect the outstanding accounts, he suggested that the following letter be mailed about one day before the collector called for the payment of the amount:

"Dear Sir:

"One of my men, Mr.....occasionally acts as my collector. But when collections are a little poor, he becomes downhearted and dejected.

"He is a good man otherwise and I like to help him along. For this reason I sometimes slip in a few easy accounts to encourage him.

"Today I slipped in your statement among the others, as I know that when he calls you will accommodate him with a check for the amount of the statement.

"Thanking you in advance and awaiting your further orders, I remain,

"Very sincerely yours,

_____"

There is nothing in this letter at which a customer could take offense—and at the same time it produces results. This letter on the master plumber and steamfitter's stationery, will produce more actual results than if letters were mailed out threatening to place the accounts in the hands of an attorney.

Another letter suggested by the credit man was very effective in getting cash from outlawed accounts and professional dead beats. In fact, it collected accounts that had formerly been in the hands of an attorney without results.

The second letter, while short, goes straight to the point, as you can see from the following:

"Dear Sir:

"Your account amounting to $....., has long been overdue. Unless this is paid, or definite arrangements made for future payment by (date, about five days), we may take action of a sort that will greatly surprise you.

"Very sincerely yours,

_____"

The feature that stands out most strongly in this letter is the element of mystery. The man who gets a letter of this sort gets to thinking of all sorts of things that may happen to him, if he does not pay his bill—and he usually pays.

You will note that this letter does not make a definite threat. It simply says "we may," but it says so in such a manner that the reader infers that such action is to be taken. If you have any old accounts on your books—accounts that have long ago been outlawed and given up for lost, it will pay you to try this letter. If there is any possible manner of getting your money, this letter should bring it At any rate, by a trial you have everything to win and nothing to lose.

A bill is pending in the Maine legislature providing for an appropriation of $25,000 for a central heating and power plant for the Maine School for the Feeble Minded. Under the terms of the bill $15,000 would be available in 1918 and the balance in 1919.

SHORT TALKS

By W. W. Hughes

The Plumber and His Accounts.

IT IS easy to become a master plumber; it is even easier for the master plumber to acquire a list of slow accounts, and once acquired it is a mighty difficult task to reduce that list to its proper proportions. To be a good collector, and that means to be a good master plumber, it is absolutely necessary that the master plumber overcome a certain inherent tendency toward a fear of talking money.

Why should this be the case?

Let any man walk into a plumbing establishment and ask that a certain piece of plumbing work be performed. In 99 cases out of 100, the order will be booked, the work done, the bill rendered, and followed by a series of statements (with blotters or monthly calendars enclosed). Finally the account becomes an eye-sore, an investigation is started, it is found that either the customer is an out-and-out dead beat, or he is slow pay, or has moved away, and the owner of the property will not assume any responsibility for the bill. Invariably, in case the right man is located, it will be found that he has a kick a yard long about the job that was done. In the meantime, the journeyman who did the job has left town, and notwithstanding the fact that your invoice carries the clause: "All complaints must be filed within ten days," you have to be the goat and take what you can get in settlement.

On the other hand, let that same man walk into the same place of business and ask to borrow a dollar. Talk about getting the gate. Man alive, he will be lucky to get out alive.

And still you continue to sell merchandise in that same old way, and merchandise costs money, and money buys merchandise; and, according to a certain rule in all books of arithmetic, "things equal to the same things are equal to each other;" hence—but why continue—you know what I mean.

All of which brings us right back to the statement in the first paragraph. The first thing that the master plumber must master (this is not a joke) is his fear or bashfulness or whatever you want to call it. When a man comes around to have a job done, look him up and find out how he pays the butcher and the grocer (every city now has one or more credit exchanges); and if you cannot get a line on him in this indirect way, go to him directly and ask him to show you how he proposes to take care of his plumbing bill. If he is right, he will be glad to show you. If he is crooked, he will be highly insulted, that is, apparently, but he is only bluffing, so that he can make a good get-away.

About six months ago, a certain contractor came into our store and asked us to give him an estimate on a plan, which he had with him. We looked him up, found that his credit was N. G., figured the job and raised the percentage of profit considerably. Notwithstanding this fact, he came in and wanted us to proceed with the work. Very frankly, we told him that the only way that we would go ahead, would be for him to show us the money first. He was insulted, etc., etc. But a month ago, one of our competitors filed a lien against this particular property for something over $800.

The fact that he was willing to pay an unusual price to us or to anyone else showed plainly that he was out to beat someone. This fact has since been proven by the filing of the lien.

Contrary to the general opinion, filing a lien is not all roses and sunshine. First of all, there is usually a wait of almost ninety days after the last work is completed before the lien is filed, so that a greater part of the investment has been idle for five or six months at the very least. Then follows a wait of six months or a year, while the attorneys attempt to get a settlement without going to court. This usually fails, and the case goes on the calendar. The court calendar is filled to overflowing, a long wait follows, finally the case comes to trail, and in the majority of cases the plaintiff is awarded judgment. And then there is another wait of a year to give the defendant a chance to redeem; failing that, the property, subject to previous mortgages, reverts to the plaintiff.

Of course, there is an allowance for interest; but this allowance is small compensation for the loss of the use of the money and for the risk involved.

The second thing to master is the fear of asking for money after the job has been done. Too many of us are inclined to wait in the hope that Mister Slow Pay will come in. We must put aside this timidity and go after the money. It has been earned, and we are entitled to it.

After using all ordinary means, except the law, to collect our just bills, it is our rule when filing liens or turning over accounts to lawyers for collection to remove those accounts from our regular ledger and assets and to carry them in a special ledger.

In this way, we take our loss right off the bat. We do not figure as a possible asset something which may never enter our coffers; and if good luck favors us, and we do get a return from our attorneys, we consider it a Christmas present.

We advise every master plumber in the business to follow this practice. Instead of cutting off the dog's tail inch by inch to make it easier for the dog, do the job right by selecting the correct length of stump and then severing the balance at one whack.

Do the same with the Slow Pays; chop them off the list bright and early, and do not deceive yourself into thinking that their promises to pay next week can be cashed at the bank.

The only good customers are those who pay their bills. Be a good master plumber by doing work for these people and let the others go elsewhere.

Lightning Calculator.

One day, as Pat halted at the top of the river bank, a man famous for his inquisitive mind stopped and asked:

"How long have you hauled water for the village, my good man?"

"Tin years, sor."

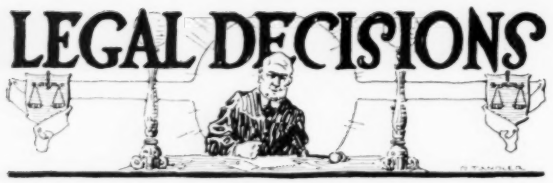
"Ah, how many loads do you take in a day?"

"From tin to fifteen, sor."

"Ah, yes! Now, I have a problem for you. How much water at this rate have you hauled in all?"

The driver of the watering-cart jerked his thumb backward toward the river and replied:

"All the water yez don't see there now, sor.—Chicago Herald.



Books of Account as Evidence.

Books of account and the like are received in testimony as ancillary to the declarations on oath of a witness who either knows the fact in general and is compelled to refer to the books for detail, or where, having at one time knowledge of the fact, he is compelled to refresh his memory from them, or, failing in that, he is able to state that he knew the fact when he made the entry and that it was entered correctly. Such writings are not evidence per se. They do not prove themselves, and are not original evidence in the full sense of the word. Books therefore must be authenticated by the oath of some one who made or directed the entry with authority, if living and capable as a witness, otherwise by proof of his hand writing posting the entries—Supreme Court of Oregon in Stuart vs. Camp, etc., Co., 165 Pacific Reporter, 359.

Acts of Partners and Rights of Creditors.

In order that a firm may be bound by the acts of a partner acting within his authority, the person whose acts it is sought to impute to the firm must have acted in his character of agent for the firm, and not as principal. If he acted as principal, he alone is liable. And whether he entered into the agreement as agent or as principal is a question of fact, dependent upon the intent, understanding, and agreement of the parties.

When a partner does an act on his own behalf, the general rule is that the firm will not be bound merely by reason of having obtained the benefit of that act. So that if a partner, without authority from the firm, borrows money, the lender cannot recover from the firm, although the money may have been applied for its benefit. But if money so borrowed has been expended in paying the legitimate debts of the firm, the lender is entitled in equity to the repayment out of the firm assets of money shown to have been so applied. Yet if he does not assert the right before the property ceases to be partnership property, his right to be subrogated as against it to the rights of the partnership creditors whose debts have been paid by his money will have come to an end.

When, upon the retirement of one partner, the others constitute a new firm, such firm is not liable for the old firm's debts, unless it assumes them.

Partners may by agreement make any disposition of the firm assets that an individual can make of his property. This is, of course, subject to the principle that the transfer is not made to defraud creditors. Whether this principle is also subject to the condition that the firm must have been solvent at the time is a question upon which the courts have differed.

Where the assets are transferred to one partner in consideration of his promise to pay the liabilities, the validity of the transaction turns upon the law of fraudulent conveyances. If no intent to hinder, delay, or defraud creditors appears, the firm creditors cannot impeach the transaction.

The priority of firm creditors depends upon the existence of the partner's lien, and if a partner consents that the firm assets shall become the individual property of one of the partners, the priority of the firm creditors is gone. As stated in Fitzpatrick vs. Flannagan, 106 U. S. 648, 654, the right of a partnership creditor to subject the partnership property to the payment of his debt in equity in preference to creditors of an individual partner is derived through the other partner, and it subsists only so long as that of the partner through which it is derived remains.—United States Circuit Court of Appeals, Second Circuit, in the bankruptcy case of Stringer vs. Stevenson, 240 Federal Reporter, 892.

Imitating Advertising or Symbols Used by Competitor.

Intentional uses of signs or advertising or other devices or symbols in imitation of those theretofore adopted by a business rival, for the purpose of deceiving the public and obtaining for himself the benefits properly belonging to his competitor, by reason of adoption of such sign, symbol or advertising, such imitation will be restrained.

The rule may be summed up thus: That all practices between business rivals which tend to engender unfair competition are odious to the law and will be restrained by the courts, for no man will be permitted to make use of signs or tokens which serve to confuse the identity of his business with that of another so as to mislead the public and divert business from his competitor to himself.

The court holds further, in O. K. Bus & Baggage Co. vs. O. K. Transfer & Storage Co., 165 Pacific Reporter, 136, that one who produces or deals in a particular thing or conducts a particular business may appropriate to his exclusive use as a trade mark or name some symbol or name which has not been so appropriated by another, to designate the origin or ownership thereof; but he cannot exclusively appropriate any designation or part of a designation which relates only to the name, quality, or description of the thing or business, or the place where the thing is produced or the business carried on.

Stated somewhat differently, every one is at liberty to affix to a product of his own manufacture any symbol or device not previously appropriated, which will distinguish the article from others of the same general nature, and thus secure the benefits of increased sales which may accrue by reason of any particular excellence he may have given to the article so designated. The symbol or device thus becomes a sign to the public of the origin of the goods to which it is attached, and an assurance that they are the genuine article of the person first appropriating the symbol; and the use thereof often becomes of great value in preventing the sale of a different or inferior article for the original product. It thus becomes his trade mark, and he is entitled to protection in its exclusive use by the imposition of damages for its wrongful appropriation by another, or by restraining others from applying it to their goods, and requiring them to account for profits made by the sale of goods marked with it.

However, under this rule, one cannot claim protection for the exclusive use of a trade name which would give him a monopoly in the sale of any goods other than those of his own. Neither can a generic name or a name descriptive of an article of trade, of its qualities, ingredients, or characteristics, be employed as a trade mark, and the exclusive use of it be entitled to legal protection.

The existence of business concerns doing business under names of which the letters "O K" constitute a part, which refer to lines of business other than that in which plaintiff is engaged, cannot be urged as a defense to unfair competition engaged in by defendant.

No trouble to buy, cheap, convenient, a real investment—War-Savings Stamps.

PREVENTABLE WASTE *of* COAL *in the* UNITED STATES

With Suggestions of Methods for Reducing the Present Waste of Fuel

WITH the hope of quickening the campaign for the conservation of fuel during the war and in order to get the problem generally before those who are immediately interested, the Bureau of Mines, Department of the Interior, has issued an article by David Moffat Myers, member of the American Society of Mechanical Engineers, on "Preventable Waste of Coal in the United States; with a Consideration of Alternative Methods of Its Elimination." This article was presented at the annual meeting of the Society in New York, December 4-7, and it follows herewith:

As a means of far-reaching economy the Government of the United States should at this time apply intelligent and direct-acting efforts to the conservation of fuel at the industrial plants which are responsible for its greatest consumption. It is unnecessary before a body of engineers to show proof that coal is wasted in vast quantities in the boiler furnaces of many plants, to feed which it is mined and distributed at a high and ever-increasing cost of labor and material.

The mining and distribution of coal have been placed under the supervision of the War Coal Board in order more nearly to meet the crying needs in these directions, to use the railroad facilities more efficiently so that the present car shortage may be minimized to the greatest possible extent, and to apportion the coal in quantity and to uses deemed most expedient.

While this organized effort to bring about efficiency in the production and distribution of coal is being made, no parallel measures have been adopted to bring about a normal and practicable efficiency in its use. The hundreds of large plants which are consuming fuel wastefully, in many cases more wastefully and carelessly than ever before, are directly and needlessly causing a large fraction of the existing car shortage. They are overloading the already strained capacity of the railroads; they are rendering slower and more difficult the transportation of food and other vital commodities, and in short they are simply counteracting the measures of efficiency in production and distribution which have elsewhere been established.

The preventable waste of fuel in the boiler furnace of one steel mill amounted to 40,000 tons per year, which at $5 a ton would cost $200,000. This was a comparatively modern plant. The efficiency of boilers and furnaces in a 14-day test was 55 per cent. The load factor was unusually favorable to high efficiency and could readily be raised to 70 per cent or over. This is only one example and there are many more extreme cases. In one hand-fired plant the evaporation was raised from 8 to 9 lb. in a few days of instruction, and continuously kept close to this higher mark with the help of coal and water measurements which were inaugurated. The saving was due exclusively to instruction and consequent better operation.

The saving or wasting of one-fourth of the coal consumption of any industrial plant depends entirely upon the efficiency of its operating management. Let me emphasize that this fraction of the consumption relates exclusively to the boiler plants, i. e., the production of steam; and does not include the large economies possible in connection with its distribution and use.

For well-known reasons the boiler plant offers the more lucrative field for producing economies, and these with a minimum of alteration in physical equipment.

Under present conditions a plant which carelessly operates at an efficiency of 40 to 50 per cent receives from the government the same consideration in the delivery of coal as the one whose efficiency is 70 to 75 per cent. This obviously is unfair as well as wasteful.

The government hands over, say, 200,000 tons of coal a year to a plant owner, but asks for no account as regards its consumption, nor any questions as to the amount of steam it is made to produce. There is nevertheless an equivalent amount of steam this fuel is capable of generating, and it can and should be made to produce that quantity.

Conservation Methods.

The object of this paper is to open a discussion which it is hoped will ultimately lead to the formulation of definite recommendations of means for the reduction of the present great preventable waste of fuel in our industries; to direct such means principally toward the elimination of that portion of the present waste which is due to faulty, careless and uninformed operation of plants; to forward these recommendations to the proper governmental authorities as an official communication of this society, and to offer to the government the service of the society for the organization, furthering, and, as far as possible, the execution of the plan which may as a consequence be adopted.

In general, there are two plans of operation worthy at least of consideration. One might be termed the autocratic method. This would involve the use of authority to compel coal consumers to execute such measures of economy as the proper authorities might prescribe for any given case. Limits to be set as to expense to the user. Such limits might be in terms of a percentage of their present yearly coal bill. Alterations to be directed chiefly, as previously implied, to purely operating improvements. Many objections would probably be made by consumers against this plan, but once in effect the majority would no doubt realize its pecuniary advantage to themselves. But its tendency may be too strongly opposed to democratic principles.

The other plan would be largely an educational one, in

which patriotism and efficiency would furnish the motive forces required.

The teaching must be accomplished with the utmost simplicity and directness

The requisite information must reach the owners and managers of industries, and there must be simple instruction sheets for the engineers and firemen. The vital importance of daily accurate records of coal and water must be taught and information given regarding practical appliances for automatic measurements of both.
of plants.

This work would be greatly aided by a staff of experts ready to visit plants when so requested by owners and make investigations and recommendations and keep in as would enable a classification which would permit a government board of experts to send such instructions as would include the information needed for any one class equipment, operation and fuel consumption of the plants sumption, and second, to obtain such data as to size, type,

Blank forms might be sent in advance to plant owners in order to be advised by them, first, whether they would be willing to co-operate with a governmental organization offering to assist them in reducing their coal contouch with the progress of economies. Included in such a staff should be men intimately familiar with practical operating economies whose duties would be the delivering of lectures or talks, which should be planned so as to reach directly not only managers and owners of the industries, but also the chief engineers and firemen of the boiler plants. This feature of the plan, by itself, would undoubtedly result in great savings.

The United States Bureau of Mines has for a number of years engaged in obtaining and disseminating scientific information regarding the mining and consumption of coal, and the results of the work have been of great value to technical engineers who are able to use and apply it. It is evident that we now require an extension of the idea of education, but in such form as directly to affect the men who run the boiler plants of our country, for in their hands is the saving or wasting of one-fourth of our fuel supply.

Six hundred million tons of coal were mined in the United States in 1916. If we assume only one-half of this to have been used for our industrial boiler plants, then a quarter of the coal used under boilers amounts to 75,000,000 tons per year. It is worth while to save this fuel by preventing its waste. This quantity of coal represents the use of 1,500,000 50-ton freight cars.

SANTA CLAUS AND THE PLUMBER'S TOOLBAG.

By Guido D. Janes.

THE old brick, three-story house on Bilious Street sprung a leak in its plumbing system. So Bill Frytag was sent out on the job to look after same. Grabbing up his toolbag and torch he meandered out into the city and street-carred to the proper destination. Whereupon he got busy straightening the trouble out.

Incidentally it might be mentioned that Bill was of a taciturn disposition, seldom gazing on the bright side of life and bearing all the war burden of the country on his personal shoulders. But this being the 24th day in the final lap of the year, he threw off his ways and partook of the holiday spirit.

The proprietor of the three-story brick was likewise of a stern, morose dispostion, but being charitable enough to recognize the purport of Christmas, he also threw off his accustomed disposition and loaded up with charity thoughts.

"It's this way," he said, coming up to Bill and at the same time putting on a Santa Claus coat, having the rest of the regalia already on, "I am a mean man eleven months of the year but on the twelfth, I change. It breaks the monotony of selfishness. Besides it gives me the reputation of being a good fellow whether I am or not."

"Good idea," laughed Bill. "It won't do any hurt, and might do much good."

"Where are you going to spend Christmas?"

"Right here, if I don't finish this job. I must hurry."

"Well spoken, Mr. Plumber," laughed Santa putting on his false face, "I too must be about my errand of charity. For at this time I visit, disguised as Saint Nick, the poor settlement part of town and give away a bunch of presents."

At this he inadvertently picked up the plumber's bag of tools, thinking it to be his pack of toys, and beat it.

Three minutes later, when Bill wanted to refer to this kit, he found it missing. Then it dawned upon him that Santa had taken it. This made him out of sorts. And putting on his hat beat it for the street. Up the thoroughfare a block distant he saw Santa with the plumbing kit on his back wandering along, as though he owned the town. The pursuit at once began.

But walk as he might the plumber could not catch up with the chap. He yelled and gestured but to no avail. Then as he passed a banana stand an idea struck him. Grabbing one, he peeled same off and threw the skin ahead of him as far as he could. It landed in front of Santa, but, as luck would have it, he did not slip on it. Instead a portly woman sauntering along in the same direction did. She dropped, as though hit by a torpedo. Coming up hastily, Bill tried to explain matters.

"Are there any bones broken?" he asked.

"No but there will be, if you stay around here," and she shook her fist at him.

Bill did not wait but beat it at once. Meanwhile Santa had turned a corner a block away and disappeared. The chase was then abandoned. Disheartened Bill sat down on a curb-stone and pondered.

After ten minutes of said pondering, Santa put in his appearance. The false face hid his expression, but by the tone of his steps one could easily divine that there was a volcano within.

"I break a rule of years' standing." He began reaching the sitting form of Bill. "I never speak a harsh word at this time of year, but now I must. You pie face, why did you pull that joke off on me by substituting that bag of plumbing junk instead of my presents. It was all right when I handed out a wrench for a gift, but when I came across with oakum instead of candy they ordered me out of the house and spoke of me as the mean rich."

It was time for Bill to get sore.

"You are mistaken. I did not pull a stunt off on you. You grabbed my pack yourself. You put me out, and balled up the job. You will either have to recover my tools or pay me $12."

Then simultaneously both broke out laughing, for the whole affair now struck them humorously.

"Come, suggested Santa, let's go and get a drink. We have no right to get roiled up now. I will get you a new outfit. I would not go back after your stuff for a hundred dollars."

"Were they sore?"

"No, they were just unpleasant enough to shoot."

REVIEW *of* BUSINESS CONDITIONS *in the* BUILDING TRADES, WITH OUTLOOK *for* IMPROVEMENT *in* 1918

Interesting Reports Which Arrived Too Late To Be Included In Our Annual Review Number

Our Maine Correspondent.

While conditions in the plumbing and heating trades in Maine the past year have been such as never before were experienced, the results as a whole have been very satisfactory in the opinions of Portland firms which have connections or are familiar with conditions in the State. They hesitate, however, to comment on the prospects for the coming year, feeling that the situation is very much mixed, or a decided problem, as one of the trade leaders expressed it. Another predicts a large increase in building, and kindred operations, due to greatly increased circulation of money through government expenditures. Others do not look for any amount of business of an investment nature.

Fred H. Rounds, vice-president and general manager of C. M. & H. T. Plummer, who do an extensive business in plumbers' supplies, not only in Portland but throughout Maine, said: "Business conditions during the year 1917, in the plumbing and steam supply business, were such as the trade had never experienced before in this territory. There were many contributory causes to this, some of which were high prices and the difficulty in obtaining material. The prices in our line, together with those of the allied lines in the building business, made speculative building prohibitive. For this reason the plumbing business fell off materially, but the increased business with the industrials, together with the heating business has given us a volume much in excess of any that we have ever done. The present high prices will undoubtedly obtain for a long time, although we believe that in nearly all lines the maximum has been reached. The coming year will undoubtedly see a large increase in building and kindred operations, as the enormous expenditures which the Government is making must put in circulation very large amounts of money. The most apparent danger in our line seems to be the attitude of the small jobber with a surplus stock for which he owes. Throwing this on the market may unsettle conditions temporarily. We believe that 1918 will be a fairly good year for our business."

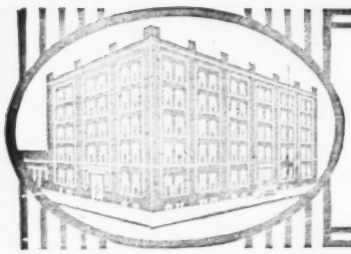
David A. Calhoun, of Willey & Calhoun, constructing engineers in heating, ventilating and plumbing, expressed his views on the past and future conditions as follows: "The heating and plumbing business has been very good with us the past year, occasioned a great deal by the fact that we had the contract for heating and ventilation in the new million dollar High School built here in Portland. This was probably the largest job of its kind ever installed in the state. This job was contracted for in the summer of 1916, but the actual work of installation did not start till the spring of the present year. Our other work has consisted principally of school houses, town halls, railroad stations and institution buildings; being erected by towns, cities, state or service corporations. There has been very little house or apartment work, due undoubtedly to the extreme high prices that have prevailed on both material and labor. While we do not wish to appear pessimistic, unless there is a decided decline in the price of almost every item that goes into the construction of a building and the labor situation improves, we do not look for any amount of business of an investment nature. This may not be so in localities where shipyards and Government activities cause an influx of new residents who must be housed. Schools and public buildings will undoubtedly have to be built, but unless the war ends and business conditions come back somewhere near normal we are of the opinion that the year of 1918 is going to be rather quiet."

Because of the resumption of ship building in his city, **Willi. ¬ E. Allen,** of C. A. Tilton & Co., at South Portland was inclined to be optimistic. "Looking back over the year just drawing to a close," he said, "we can say that our business has been better than for several years, each month showing a substantial increase over the corresponding month for five or six years. There has not been much new building, but our citizens seem to have plenty of work at good wages. This, with the resumption of shipbuilding, there being four yards now in operation in this city and another being built, has given all classes of business a spurt and bids fair to continue throughout another year. We have furnished quite a lot of material and labor for the fortifications in the harbor and plans are being made for many improvements at the forts the coming year. An early peace might change conditions somewhat, but with shipbuilding, which will last for years to replace that which has been destroyed and to meet increased export trade, we see no reason why business in this section should not continue to be good. We also look for much new government construction in the harbor next season."

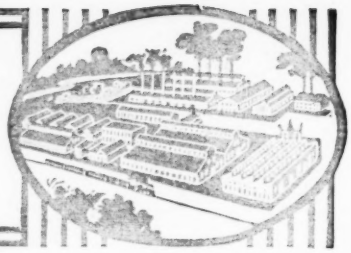
John G. Fleck, Vice-President and Manager of Fleck Bros. Co., Philadelphia.

Conditions in the plumbing supply business in Philadelphia and the immediate vicinity have been exceptionally good. There has been a very heavy demand for materials for industrial and Government work, and this section of the country has been particularly favored on account of the close proximity to a number of the cantonments, which required a great deal of material, so much so that at times the Philadelphia manufacturers' and jobbers' stocks have been very much depleted, due to this demand, on a number of lines, mostly on pipe, valves and fittings. While 1917 has been an excellent business year for us, we are not looking for the same condition in 1918. Plumbing materials will unquestionably be regarded as "non-essentials." Stocks will be hard to replace, and the demand in the regular building line will be very limited.

(Continued on Page 574.)



Among the Wholesalers and Manufacturers



COMPANIES RECENTLY INCORPORATED.

The Fayette & Porter Mfg. Co., of Oswego, N. Y., has been incorporated with a capital of $25,000, to manufacture plumbing specialities. The incorporators are: G. B. Fayette, H. S. Lavere and G. E. Porter.

The H. A. Norbom Mfg. Co., of Philadelphia, has been incorporated with a capital of $100,000, to manufacture heating specialities. The incorporators are: Halfdan A. Norbom, M. J. Robinson and M. L. Maris, all of Philadelphia.

The Uniform Heater Co., of Chicago, has been incorporated with a capital of $5,000, to manufacture heating specialties. The incorporators are: A. J. Moore, W. C. Hodgins and J. G. Flint.

The Electric Steam Radiator Co., of Chicago, has been incorporated with a capital of $60,000. The incorporators are: Frederick E. Ellithorpe, Gilbert Ellithorpe and William B. Lucas.

NOW THE "WIGMAN-CURTIS CO."

The Wigman Co., of Sioux City, Iowa, has just announced that after January 1, 1918, it will do business under the name of the "Wigman-Curtis Co." There will be no change in the personnel of the company.

THE D. T. WILLIAMS VALVE CO. BUYS LARGE PLANT.

The D. T. Williams Valve Co., of Cincinnati, O., has just purchased the plant of the Queen City Brass & Iron Works at Spring Grove Avenue and Garrard Street, in Cincinnati. The price paid for the plant is said to have been $300,000. The Williams company faced the alternative of building a large addition or buying an additional plant, and it decided to do the latter.

THE NATIONAL PIPE AND SUPPLIES ASSOCIATION AND OTHER TRADE ORGANIZATIONS TO MEET IN CLEVELAND, O.

The ninth annual convention of the National Pipe and Supplies Association will be held in the city of Cleveland, O., Monday and Tuesday, May 13 and 14, 1918. Headquarters will be at the Hollenden Hotel, and all sessions of the convention and all committee meetings will be held in that hotel.

On the Wednesday, Thursday and Friday following will be held the triple convention of the National Supply & Machinery Dealers' Association, the Southern Supply & Machinery Dealers' Association and the American Supply & Machinery Manufacturers' Association.

Thus will four great national trade organizations, covering the manufacture and distribution of steam, plumbing, mill and mine supplies and machinery, be in convention for the five days of that week. This arrangement of the meetings will present an unusual opportunity for manufacturers and distributors to see each other, and to get together for discussions of the important propblems that will daily be presented at the conventions.

CRANE CO.'S ANNUAL GIFT.

Crane Co. this week make its 17th annual gift to its thousands of employes connected with the Chicago and branch offices and plants. The gift, based on ten per cent of the yearly wages and salaries of the employes, amounts this year to $1,250,000. The sum distributed for the seventeen years since the policy was inaugurated, aggregates $8,500,000. In addition to the gift this year the company distributed United States Government Thrift Stamps to all employes, accompanied by cards, bearing Christmas greetings from the company.

ENAMELED SANITARY WARE MANUFACTURERS TO LIMIT PRODUCTION FOR THE SAKE OF FUEL CONSERVATION.

Decide to Curtail Production Voluntarily.

The members of the Enameled Sanitary Ware Manufacturers' Association, through its War Service Committee, has been in close touch with developments at Washington as they have affected the various lines of industry. It has been apparent for sometime that it would be necessary for certain lines to curtail production in order to increase the output of other lines that are absolutely essential to the prosecution of the war.

At a recent conference of War Service Committees of Industries, held in Washington, Dr. H. A. Garfield, Fuel Administrator, pointed out the necessity of saving fuel so that the fifty million ton shortage now confronting us may be overcome. He made it very clear that it was the wish of the government that this saving be effected by voluntary curtailment of production in those lines which, while not classed as non-essentials, were not as necessary in the production of war materials as certain other industries.

Believing that the one business now confronting the people of the United States is the winning of the war and that all personal and corporate matters must make way for same, the members of this association felt it to be their patriotic duty to do what they could to assist in the work of the fuel administration. They have, therefore, unanimously decided that, effective immediately, they will limit the production of their individual plants to 33⅓ per cent of their muffled furnace capacity. This action has been recorded with the Fuel Administration at Washington and has been communicated to those manufacturers who are not members of the association, with the request that they, too, take similar action.

After a careful survey of conditions affecting the industry, building conditions throughout the country and possible

requirements, the association felt that a maximum of 33⅓ per cent production will assure demands of the country being taken care of.

It is firmly believed that many other industries will take similar action in the near future and thereby release for other and more important lines of effort, the fuel and man power that are so essential to the prosecution of the war.

COMMENTS ON MAILING OF MONTHLY STATEMENTS.

Secretary Frank S. Hanley of the Eastern Supply Association has just published the following comments on "Mailing of Monthly Statements":

In a recent bulletin we set forth the following suggestion from a member:

"It occurred to us that in view of the increase of postage that a great deal of expense and labor could be saved by members of the Eastern Supply Association by eliminating sending out monthly statements and returning receipted bills.

"We believe if this was brought to the attention of the association, and with the co-operation of the members, that a substantial saving would be the result."

We are now in receipt of the subjoined comments in reference thereto:

"Referring to the notice in the bulletin of November 8th in regard to the increased postage, would say that we think that no one who endeavors to save postage could possibly be misinterpreted as reducing the revenue which the government expects to get from this source, but it certainly does seem that the public, the merchants and the manufacturers could save directly as well as indirectly during war times, and we feel that the suggestion made by one of the members that the monthly statements be eliminated, as well as the return of receipted bills, is a good one. This appears to be a very good suggestion, particularly as regards statements for current accounts. Of course, it will be necessary to send out then only such statements as cover past due items.

"We have always felt that most statements find their way promptly to the waste basket, except in a few cases where we find some of our customers prefer to pay against the statement at the end of the month.

"It will be interesting to get some further comments from the jobbers themselves with whom we do business, and if the association can go on record in favor of the elimination of the sending of monthly statements to the trade and the return of receipted bills, the manufacturers of course will be very glad to co-operate."

FOREIGN TRADE'S PART IN WINNING THE WAR.

"The event of transcending importance to the foreign trade of the country during 1917 was the entrance of the United States into the war," declares Burwell S. Cutler, in his first annual report as chief of the Bureau of Foreign and Domestic Commerce, of the Department of Commerce.

"From the beginning of the war to the time of our entrance into it," continues Mr. Cutler, "the business of the American manufacturer and exporter was to make the most of new opportunities in the markets of non-belligerent countries, to take wise and needful steps in preparation for trade after the war, and to sell munitions and supplies to the belligerents.

"These were legitimate activities. They were vital to the industrial life of the Nation. But when we entered the war, the perspective changed. Trade with our war associates assumed a new, a different, a much greater significance in our eyes. It became primarily a means of winning the war rather than of winning profits. It became a link between the greatest storehouse in the world and the European nations with whom we had cast our lot in the world struggle.

"Our attitude toward the markets in non-belligerent countries has also changed as a matter of course. Trade with them must now be conducted with a careful and patriotic deference to the successful prosecution of the war. Preparations that we make to hold our place in those markets and to expand our opportunities must be made for the time being with strict reference to policies which govern our political relations. However, it is confidently expected that our trade with South America, the Far East, South Africa, and with Australia will not be too seriously interfered with and that we may reap in the future the benefits of having cultivated those markets so assiduously and intelligently during the past few years.

"Important as it is that we hold our own advantage in these and other markets, we must not lose sight of the fact that all such advantages are likely to disappear, if we do not come out of the war victoriously."

The report reviews in an exhaustive manner the foreign trade of the country during the fiscal year ended June 30, 1917, which it refers to as "our greatest year in foreign trade." The statistics are arranged to show the growth of trade month by month since 1913, so that the effect of the war may be easily traced.

Considerable space is given to the unusual activities of the bureau during the year that resulted from the entrance of the United States into the war, these activities including the organization of a staff for licensing exports, work in connection with the tin plate conservation campaign, the collection of information concerning foreign embargo legislation, the facilitation of imports of raw materials from Russia, the protection of American trademarks in foreign countries, and numerous others, all of which were carried on by the regular bureau staff, except the export license work, for which volunteer work was accepted from the outside.

Attention is called to the increased extent to which foreign markets have been studied through the agency of traveling special agents. At the beginning of the fiscal year there were thirteen such agents in the employ of the bureau, while at the close of the year this staff had been doubled. The information collected by these agents helps American manufacturers to extend their trade now and is also aimed to help them prepare for trade after the war.

Before entering the bureau, Mr. Cutler was president of a large manufacturing concern, a fact that lends interest to the following estimate of the bureau's service to the American manufacturer.

"As a practical manufacturer and exporter, I entertained to a mild extent an instinctive skepticism regarding the efficiency in organization and productive capacity of a government bureau as compared with the highly organized forces characteristic of large private enterprises, for this is a feeling all too common among business men. I find that a misapprehension of the value of the bureau is based on a typical ignorance of the bureau's current activities. Please let me emphasize the conviction that the Bureau of Foreign and Domestic Commerce is a genuinely producing agency, well organized, and calculated to assist our manufacturers and merchants in ways eminently useful."

MARKET FOR PUMPS IN PARAGUAY.

United States Consul Henry H. Balch, of Asuncion, Paraguay, reports that inasmuch as there is no water supply system for the city of Asuncion, which has about 80,000 population, or for any of the other cities or towns of the Republic, there is a constant demand for a limited supply of hand pumps, windmill pumps, electrical, and gas pumps to be used in wells for the purpose of supplying water to residences, business houses, public buildings, etc., in Paraguay. Aside from two breweries, three ice plants, three sugar refineries, some small bottling plants, and a very few other small plants which require pumps a little larger than those used by the average family, there is practically no market for any class except those used in supplying water from wells for ordinary family needs.

The total value of all pumps imported into Paraguay in a year averages about $6,000, of which more than half represents imports from the United States. Germany hitherto has been the nearest competitor, followed by England.

An Asuncion importing house handles many of the pumps sold in the country. Information regarding credit reliability should be obtained from one or the other of the following Asuncion banks: El Banco de la Republica, El Banco Mercantil, and El Banco de España & Paraguay.

The name of the importing firm mentioned may be obtained from the Bureau of Foreign and Domestic Commerce, its district or co-operative offices, upon request, referring to file No. 95587.

CALL ISSUED FOR PUMPS BY RED CROSS IN FRANCE.

The following cablegram has just been received from the Paris headquarters of the American Red Cross:

"'Send us pumps,' is an appeal from a Red Cross delegate in the devastated area. The retreating Germans left little untouched there last spring. Spokes were cut from wheels of farm carts, orchards were felled, farmhouses wrecked. In many cases pumps were destroyed, wells filled with rubbish and polluted.

"Of the few men and women who have managed to filter back to live in the one good corner of their wrecked buildings, to clear the fields of barbed wire and try to till them, none dares drink from the old wells which they had depended on all their lives unless they bear a sign reading 'Good water,' to show that they have been purified.

"To these safe wells people come from far and near with their jugs and pails. To make their already difficult life a little easier and to make it possible for more of them to come back to their devastated fields—all they have—as soon as pumps can be bought, 10 will be sent to fill the need for them in this district. It is a real, though slight, contribution to the giant task of reconstruction."

CLOSE WATCH ON GERMAN TRADE PREPARATIONS.

German preparations for trade after the war are being scrutinized carefully by experts in the Bureau of Foreign and Domestic Commerce, of the Department of Commerce, and the recent important report on the subject of "German Foreign Trade Organization," by Chauncey D. Snow, which touched on this point, has been in such great demand as to establish a new sales record for government trade reports.

Since the war eliminated Germany from world trade, the United States has improved its position in foreign markets in spite of the shipping shortage and other abnormal restrictive factors. Department officials point out that the future prosperity of the country will depend in part on Germany's loss of good will in practically all foreign markets and in part upon American ability to maintain our new prestige. American business must not make the mistake of seeing only one side of this situation and thus underestimating the German capacity for foreign trade nor the energy, application and craft with which German business will address itself to the task of regaining favor in markets in which it once prospered.

In order to understand the significance of the information on German trade moves that will from time to time be made public, Secretary Redfield counsels not imitation of, but familiarity with the German theories of foreign trade and the artful and formidable organization that with government aid at every turn, has been built up in Germany during the last twenty years to dominate the world's markets. It was to meet the demand for such information that the Bureau of Foreign and Domestic Commerce issued the bulletin on "German Foreign Trade Organization." The unprecedented demand for it is taken as an indication that the American manufacturer is makafter-war preparations of his own.

The bureau now plans to get out a supplementary bulletin on German trade and preparations for the commercial future about the first of the year, and further supplements as rapidly as important additional information is received.

PERSONAL MENTION.

W. T. Brace, manager of the Chicago office of the J. L. Mott Iron Works, of New York City, was the principal speaker at the annual banquet of the salesmen of the Globe Machinery & Supply Co., of Des Moines, Iowa, held in that city on Thursday evening, December 27th.

THE "HK" TRIPLET SINK FAUCET.

"A beautiful, compact and economical fixture for installation where three faucets were formerly required." This is the introductory description of the "HK" Triple Link Faucet, which has just been placed on the market by the Kretschmer Manufacturing Co., of Dubuque, Iowa. It is

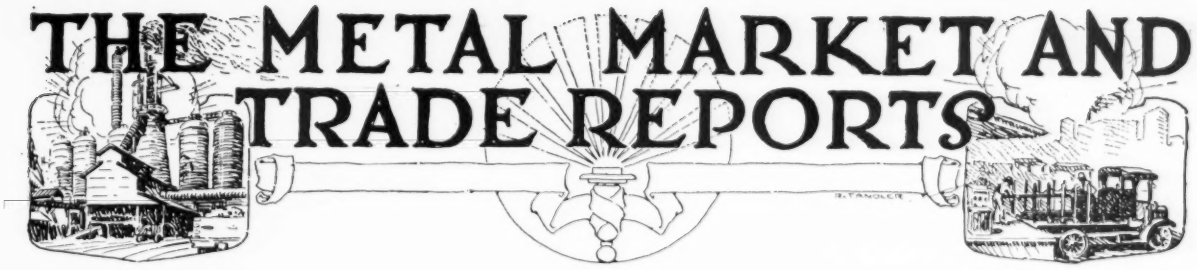
The "HK" Triplet Sink Faucet.

further described as having quick compression action and china handles. It is designed to furnish hot and cold soft water, and cold city water, and it has a mixing chamber for the purpose of insuring a properly tempered stream of water readily controlled.

THE "KINGSBURY" ELECTROFLUSH.

The National Regulator Co., of Chicago, has just issued an attractive booklet illustrating and describing in detail the "Kingsbury Electroflush," an electrically operated device for flushing urinals. It is described as being absolutely sanitary, automatic, made to fit any standard urinal stall and to flush only when used.

THE METAL MARKET AND TRADE REPORTS



Steel and Iron.

A slight improvement in transportation last week has helped the operation of blast furnaces and steel mills, and hopes are entertained that the iron and steel industry will shortly recover from curtailment in production which resulted from the cold snap of two weeks ago. There is no hope, however, of the industry operating at capacity in the near future. Production of pig iron for the year just ending may be estimated at about 38,750,000 tons as against 39,400,000 tons in 1916, while steel ingot production may be set at 42,000,000 tons against 41,400,000 tons last year. Fully supplied with raw materials and labor, the blast furnaces should produce more than 42,000,000 tons a year, while steel ingot capacity is set at 50,000,000 tons a year. Inquiries for steel continue light and bookings for ordinary commercial purposes are small. But the market is always quiet at this season of the year, and added to this is the restriction of operations on the part of consumers, due to fuel and labor shortage. Besides the talk, that another price revision is coming after January 1st, is having its effect. Eventually there will doubtless be heavy buying of iron and steel by the government to take care of the comprehensive program being worked out at Washington, looking to the providing of additional rolling stock and other necessities for the railroads. The work involved a survey of existing facilities for producing cars and locomotives and furnishing necessary raw materials for rolling stock and other facilities that may be needed. Production of pig iron continues in a restricted state and hope for improvement is lacking. There is considerable inquiry for early deliveries of pig iron, billets, sheet bars and rods, while there is little inquiry for finished rolled products, consumers evidently waiting until the turn of the year before paying attention to fresh purchases. The trade professes to believe there will be an increase of iron and steel in the near future, but there is no tangible evidence in sight of this hope being fulfilled. Sheet mills are scarce, sellers reporting that they are out of the market for early deliveries. The coke situation looks better as the car supply in the Connellsville region has increased. The Pennsylvania R. R. Co. transferred a number of locomotives from the Buffalo and Allegheny division to the Pittsburgh district, which helped to move cars with more dispatch than before. Manufacturers of machinery, not used for war, have been seeking to divert their equipment to war purposes. Furniture manufacturers of Grand Rapids have banded together to take aeroplane manufacturing work. A large talking machine company is making fuses; another is making aircraft cameras. Detroit manufacturers, including several automobile makers, have organized a $2,000,000 company, which has received a contract involving $30,000,000. Printing press builders are making machine tools. Such instances could be multiplied many times and show the drift of manufacturers toward war work. Those who do not obtain such work will surely suffer, if not already affected by present conditions of labor shortage, transportation congestion and lack of coal, iron and steel for both war and non-war work. Prices for pig iron are based upon the old standard grades of No. 2 foundry and basic iron at $33 at the furnace and will be operative at least until January 1st.

Copper.

Now that the price of copper is not likely to be disturbed for an indefinite time, and that the same regulation in respect to production and distribution seem to be assured, consumers are left without problems to solve. Neither have they to worry over supply for they have been well taken care of since the Copper Producers Committee was established, and there is no likelihood that they will fare worse in the time to come. Production during 1917 will be about 150,000,000 pounds less than in 1916. But there was no shortage, notwithstanding curtailment of production by labor troubles. Were it not for this loss, it is probable that production in the United States in 1917 would have been close to equaling that of 1916, the smelter production of which was 1,928,000,000 pounds.

Tin.

The position of tin is still unsatisfactory, hampered by the business of the spot market, British trade regulations and the United States Government requirements and requisitions. Between these difficulties, there has been very little business done. The British regulations remain unchanged, notwithstanding the protection afforded the British Government and its American ally by having all consignments come to the American Iron and Steel Institute for distribution. The nominal price of spot Straits tin during the week was 90 cents to 92 cents but no business was reported.

Lead.

Prices are firm because of short supply of lead for several days. Were it not for the light demand, usual at this season, the scarcity might have been severely felt and the market might have gone higher. The situation is bullish because of the difficulty of securing prompt shipment to the New York markets. No official change in price was announced by the principal producers, who continue to quote New York delivery at 6¼ cents, but no spot or nearby lead can be purchased at that price.

Spelter.

Sellers will not make any concessions, and though the market is quiet it is holding steady with prices quoted at 8 cents New York, and 7½ cents in East St. Louis.

Old Metals.

The following prices are current in New York for old metals:

	Buying	Selling
Copper, heavy cut	23c	23½c
Copper, heavy and wire	21c	23c
Copper, light and bottoms	18½c	21c
Brass, heavy	14c	15½c
Brass, light	11c	11¾c
Lead, heavy	5¾c	6¼c
Tea lead	4¼c	5½c
Lead scrap	5¼c	6½c
Zinc scrap	5¼c	6¼c

The buying prices are those which the larger dealers will pay; the selling prices are market quotations.

AMONG THE PLUMBING AND HEATING CONTRACTORS

Illinois

Chicago and Vicinity.

The North and Northwest Master Plumbers' Pleasure Club held its annual election of officers on Friday evening, December 21st. The following gentlemen were chosen as officers of the club for the ensuing year: President, William R. Black; vice-president, Henry H. Diedesch; financial secretary, J. A. Slater; recording secretary, Louis A. Goldacker; treasurer, Henry Breyer, Jr. The club is planning to make the winter season a period of activity in social doings and particularly in bowling.

The plumbing contract for two apartment buildings, comprising ninety flats, to be erected at 3024-34 North Halsted Street at a cost of $360,000, has been awarded to Noble & Thumm, of 2313 Lincoln Avenue. The heating contract went to Schampel & Dougherty, of 173 West Washington Street. The architect is Paul F. Olson, 127 North Dearborn Street.

William Morant, of 1478 Catalpa Avenue, has secured the contract for the installation of the plumbing system in a six-store and forty-five apartment building to be erected at a cost of $200,000 at 1600-10 Montrose Avenue. The heating contract was awarded to Nilson Bros., of 3222 North Halsted. The architect is Carl W. Westerlind, 111 West Washington Street.

William Downs, of 4219 South State Street, will install heating and plumbing systems in an apartment hotel, which is to be built at a cost of $250,000, at 712-29 Sheridan Road.

T. J. O'Malley, of 308 West Oak Street, has secured the contract for the installation of the plumbing system in a warehouse to be erected at a cost of $100,000 at 350-56 West Ontario Street. The heating system will be installed by E. J. McDonough, of 46 East Kinzie Street.

Jos. J. Maday, of 8230 Coles Avenue, has recently been awarded the contract for the installation of the plumbing in a store and flat building, to be built at a cost of $15,000 at 8400 Colfax Avenue.

A. Allardyce, of 5450 North Clark Street, will install the plumbing system in a six-apartment building to be erected at a cost of $19,000 at 4434-36 North Campbell Avenue.

Menus Johnson, of 7841 Burnham Avenue, has secured the contract for the installation of the heating in two residences, to be erected at a cost of $7,000 each, at 8315 and 8319 South Shore Avenue.

E. Stevenson, of 6142 South Western Avenue, has recently been awarded the contract for the installation of plumbing systems in two dwellings of two flats each, to be erected at a cost of $5,000 each, at 1925-27 South 62nd Court.

Chapin & Dorsey, of 73 West Washington Street, will install the heating system in a storage building, to be constructed at a cost of $18,000, at 3139-43 West 25th Street.

Robert Liss, of 1919 Belmont Avenue, has secured the contract for the installation of modern plumbing in a two-family building to be erected at a cost of $5,000, at 4921 North Marshfield Avenue.

The contract for remodeling the plumbing in a restaurant, at 130-2 South Clark Street, has been awarded to the M. J. Corboy Co., of 178 West Randolph Street. The heating system will be remodeled by the Arcade Steam Heating Co., of 126 West Kinzie Street.

Other Cities in the State.

Mapes Bros., of 407 South Church Street, Rockford, have been awarded the contract for the installation of the plumbing system in a bakery to be erected at a cost of $60,000 at the corner of Green and Winnebago Streets. The heating contract was awarded to Harmon & Nicholas, all of Rockford.

Weigler Bros., of 171 Chicago Avenue, Elgin, will install plumbing and heating systems in a gymnasium, to be erected at a cost of $25,000, on Park Avenue in that city.

White & Hanson, of Mattoon, have secured the contract for installing the heating and plumbing in a large addition to a store building in that city.

Nebraska

E. R. Hendricks, of Omaha, has recently been awarded the contract for installing the plumbing and heating systems in a twenty-eight apartment building at 52nd and Capitol Avenues, Dundee, a suburb of Omaha, also the contract for plumbing and heating in the Ford Universal Garage at 26th and Leavenworth Avenues, and the contract for plumbing and heating the Wanger garage, which is now under construction.

Iowa

A. L. Hammel, formerly of the firm of Nesler & Hammel, has engaged in business on his own account and is now conducting a plumbing and heating establishment at 1276 Clay Street, Dubuque. He would like to receive catalogues from manufacturers and jobbers of plumbing and heating supplies.

M. J. Corcoran, of 570 West Seventh Street, Des Moines, will install plumbing and heating systems in the new office building and the enlarged and remodeled plant of the Iowa Packing Co. in that city.

The Champaugh & Chilson Plumbing & Heating Co., of Ames, has been awarded the contract to install plumbing and heating systems in a public school building to be erected in Strahan. The company also has the contract to install plumbing and heating systems in another public school to be built at Napier. The latter contract amounts to $14,000.

M. C. Royer, district manager of the Des Moines office of the Burnett-Larsh Mfg. Co., of Dayton, I., has just returned from a flying trip through the northern part of the Hawkeye state. He reports business conditions brisk and improving.

Connecticut

The contract for plumbing and heating installations in a new fire and police building at Windsor Locks has been awarded to A. F. Saxton, of Hartford, who was the lowest of several bidders.

The walls are up and work is rapidly progressing on a warehouse and central heating plant at Hartford to be used for storage purposes by the G. Fox & Co. department store, and from which heat will be supplied for their store on Main Street. The new building will be eight stories in height.

James T. Gannon and Fred L. Markham, who have for some time past conducted a plumbing business at Wallingford under the firm name of Markham & Gannon, have dissolved partnership. Mr. Gannon has taken over the business and will continue it at the old stand.

The contract for plumbing and heating in a new house on Columbia Boulevard, Waterbury, for S. S. Poulsen, has been placed with W. H. Lowe, of Waterbury.

Louis Nair, who conducted a plumbing business at New Britain under the firm name of Louis Nair & Co., has filed a petition in bankruptcy. His schedule shows liabilities of $19,499 and assets totaling $16,712.

Maine

Sleeper Bros., of Rockland, have the contract for installing plumbing and heating systems in a new post-office building to be erected in that city.

Constantine L. Wright, a master plumber, of Belfast, has filed a petition in bankruptcy, scheduling liabilities amounting to $2,773 and assets of $379.

David A. Calhoun.

On a bleak, blustering day recently the "Portland Evening Express" published a snapshot of David A. Calhoun, member of the Portland plumbing and heating firm of Willey & Calhoun. "It is a good day to show a likeness of David A. Calhoun," the accompanying item said, "for one of the first things that enters a person's mind on a day like this is how to keep warm. That's Mr. Calhoun's life specialty — keeping people warm. At present the firm of Willey & Calhoun, of which he is the head, is making plans to keep over 1,000 boys and girls warm through the long winter months. This concern is putting in the heating plant of the new Portland high school, the largest contract of its kind ever worked out in the state. To show his utter contempt of cold Mr. Calhoun lives all the year round at Cape Elizabeth. He was born in East Boston, but he thought his ability as a heating man could be better tried out in a cold climate and he emigrated to Maine. He established himself in business in Portland in 1888 and has continued since. He is famous in Maine as a fisherman who never lets the big ones get away."

Massachusetts

Final steps in the incorporation of the Massachusetts State Association of Master Plumbers has now been taken, and it is expected that the secretary of the commonwealth will issue the charter within a few days.

R. C. Van Amringe.

Robert C. Van Amringe, who has acted as attorney for the Master Plumbers' Association of Boston and Vicinity for some time past, has been appointed by the directors as permanent secretary, succeeding F. K. Armstrong, who was recently called to the colors. Mr. Van Amringe has had his office with the association, and was familiar with Mr. Armstrong's work and thus able to take it up where he left off. He will have a clerk to assist him.

The Boston association this week moved into new quarters in Room 43, 53 State Street. The new location is convenient to both business and financial districts, being but a step from Washington Street. In addition to the business office the association has the use of a large committee room for meetings.

Officers for the coming year will be elected by the Boston association at the first meeting of the new year, on Tuesday evening, January 8th. Edward C. Kelly, David Craig and William P. Kane have been named by President Cox as a committee on nominations.

The foundation is being laid at Gorham and Unions Streets, Lowell, for a building to contain four stores and six apartments, for Joseph F. McMahon, head of the plumbing firm of Joseph F. McMahon & Co. The building is to cost $25,000.

The W. J. Hyland Manufacturing Co., of Springfield, was the lowest bidder for installing modern plumbing in a new eight-room school house soon to be erected in that city. The George H. McLean Co., also a local concern, was the lowest bidder for the heating.

Robert T. Allen, proprietor of a plumbing establishment at Saugus, was seriously injured recently while on a hunting trip at Marthas Vineyard. He was accidentally shot by a companion who was demonstrating a new automatic repeating rifle while the two were at a store for supplies. Mr. Allen was taken to a Boston hospital for treatment.

Andrew F. Curtin, of Medford, former president of the Massachusetts State Association of Master plumbers and member of the plumbing and heating firm of Page & Curtin, has three sons in the national service. Andrew F. Curtin, Jr., who was in business with his father, is a member of the naval reserve and has been stationed at Newport, R. I., in training for sea service; John J. Curtin is in the quartermasters' department of the army, and Frank G. Curtin is in the regular army.

B. A. Driscoll, a well-known master plumber of Salem, and a member of the Massachusetts North Shore Association of Master Plumbers, is recovering from a slight operation performed at the Salem Hospital.

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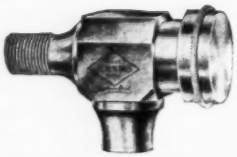

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John J. Mullen, the plumber mayor of Everett, failed of re-election at the recent city election. Mr. Mullen had served as chief executive but one term. He conducts a successful plumbing business in Everett.

J. C. M. Tucker, a Chelsea master plumber, has been elected a member of the board of aldermen of his city, but W. J. Kenny, a Medford master plumber, was not so successful in his candidacy for the board in his city. He was defeated by a small margin.

Edward H. Gregory, of 878 South Water Street, New Bedford, has the contract for plumbing and heating in a new addition to the tuberculosis hospital at New Bedford. The addition will contain eight hospital rooms, each with bath, rest rooms, lavatories, etc.

The contract for plumbing in a $25,000 public garage, being erected on Elmwood Street, Newton, for the Elmwood Investment Co., has been awarded to B. M. Thomas, of 431 Center Street, Newton, and the heating to F. I. Rice & Bennett Co., of 35 Chardon Street, Boston.

Plumbing Inspector Arthur R. Dobson, of Brockton, has been making a careful inspection of the sanitary arrangements at the several public school buildings of the city during the past month and is expected to make recommendations for any necessary changes or improvements, in his annual report to the city government.

G. W. Bailey, who recently opened a plumbing and heating establishment at the corner of South and Market Streets, Foxboro, already has a number of good contracts on hand and indications are that he will be busy for some time to come. In connection with his plumbing shop Mr. Bailey has opened a store for the sale of stoves, ranges and other household appurtenances.

Pennsylvania

Philadelphia and Vicinity.

B. Landau, of 1216 North Fourth Street, Philadelphia, has been awarded the contract for installing plumbing systems in 24 houses in Paulsboro, N. J., which are being erected by the du Pont Powder Works.

George Orolovitz, of Third and South Streets, is building a large warehouse in connection with his plumbing and heating business.

Baral Heating Co., of this city, has been awarded the contract to install heating plants in 200 houses on the Chester Short Line.

Henry Lutz & Co., of 16th and Summer Streets, will install heating and plumbing systems in the Tastie Kake Baking Co.'s building on Sedgely Avenue.

N. Connelly, of 1905 Ridge Avenue, has secured the contract for installing the heating system in the Armory on Broad Street.

The Cunningham Piano Co. has acquired the title to the property at 1314 Chestnut Street, where the concern will erect an office and store building.

J. A. Quinn, of 1613 Unity Street, has secured the contract for the installation of plumbing in twenty-four dwellings, which are being erected at Frankford.

The Master Plumbers' Association of Philadelphia, has decided to postpone its annual ball, which has always been held in January. Owing to Red Cross activities on the part of many of the wives and daughters of members, the association took this action.

It is reported that the United States Government has under consideration the building of a thousand houses in Chester at once, to care for the heavy influx of workmen who are securing employment in the industrial plants of that city.

New York

Albany Master Plumbers' Association Elects Officers at Annual Meeting.

At the annual meeting of the Albany Master Plumbers' Association held on Tuesday evening, December 18th, in the Van Vechten Building, in Albany, the following officers were elected for the ensuing year: President, Joseph Nicklas; vice-president, William H. Branion; recording and corresponding secretary, William R. Cassidy; financial secretary, Frank F. Schimpf; treasurer, John E. Dugan; sergeant-at-arms, Joseph O. Stapf; trustees: Clarence F. Keeshan, Henry J. Noord, John T. Kerwin, Albion J. Eckert and John S. Doyle. These officers were duly installed by John H. Moran, formerly state president, after which the members adjourned, going in a body to the Elks Club, where a few hours of social merriment were the closing feature of the evening.

The Annual Meeting of the Master Plumbers', Steam & Hot Water Fitters' Association of Suffolk County.

The Master Plumbers, Steam & Hot Water Fitters' Association of Suffolk County held its annual meeting on Friday evening, December 14th, at Bay Shore and re-elected the following officers for the ensuing year: President, J. B. F. Thomson, of Huntington; vice-president, William P. Ketcham, of Babylon; secretary, Harry Laegen, of Huntington; treasurer, F. E. Gordon, of Patchogue; sergeant-at-arms, C. P. Thomas, of Bay Shore, and marshall, D. S. Tuthill, of Huntington.

Following adjournment the members enjoyed an excellent dinner, at which the conversation quite naturally drifted to military matters. Freelan Jones, a member from Smithtown, claimed that he enlisted in some branch of the service, but was not certain just what branch. It happens that President Thomson is a military strategist and enthusiast, being an officer in Troop "K" of the National Guards, so he took Mr. Jones in hand and tried him out. A broom was procured which Mr. Jones used as a gun. Mr. Jones proved to the satisfaction of all present that he had not enlisted in the Salvation Army, as he knew all about the Manual of Arms, Duties of a Soldier, Flank Movements, squad formation, etc., etc. President Thomson then gave a demonstration of "Getting over the top" but whether the floor was too slippery or he did not have the regulation army shoes, he made one leap and landed flat on the floor. Now those present were not familiar with the method of getting over the top, but they all agreed that President Thomson was trying to swim over.

It will be remembered that the Master Plumbers, Steam & Hot Water Fitters' Association of Suffolk County was organized last June, but in the short time, it has been in existence, remarkable results have been accomplished. The Association believes in giving the members real benefits for their money. They have recently put into effect a Delinquent Debt Collecting System, whereby the members go over their books and make a list of all the delinquents, a printed question form is then filled in and mailed to the Secretary, who, in turn gets right after the delinquent. Should he be unsuccessful, he hands the case over to the attorney retained for the purpose, with instructions to commence suit. Should the attorney collect, a nominal fee, not exceeding 10 per cent, is retained by him, in the event that he cannot collect on the judgment, no charge is made.

The attorney, Wallace E. J. Collins, Justice-elect of

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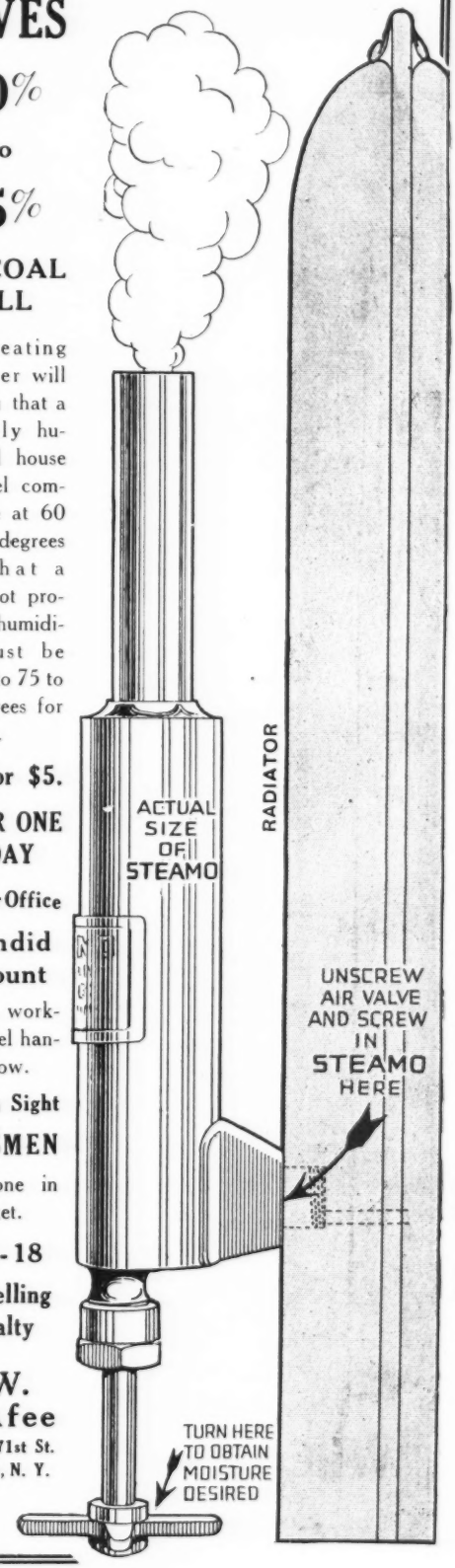

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The plumber and steamfitter who uses the ***Bradford Price Book*** finds the balance on the proper side of his ledger at the end of the year.

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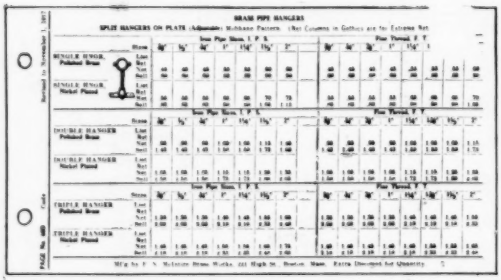
(Signed) Boston Master Plumbers' Assn.,
Boston, Mass.



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Department C

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Huntington, is the man who represents the members, but thus far very few claims have gone to him for collection, as four-fifths of the claims have been collected by the Secretary.

Other Cities in the State.

Kumpf & Saltoro, of Mt. Morris, are installing the steam heating system in the Mt. Morris Garage in that city. The contract amounts to $2,000.

F. C. Lyons, of Horseheads, has been confined to his home for several weeks, owing to a badly strained back, sustained while assisting in moving a large bathtub.

Alfred C. Woodward, of the firm of Woodward & Stauffer, of Watkins, is recovering from pneumonia.

The Volz-Secord Co., of Batavia, has secured the contract for the installation of a heating system in the new city filtration plant. The concern is now installing plumbing and heating systems in the new Woolworth store in that city, this plumbing and heating contract amounting to $4,000.

Charles Mancusa & Son, of Batavia, have recently moved into their new building on Elliott Street. They are engaged in a general plumbing and hardware business, and are planning the erection of a new warehouse and plumbing shop during the spring months.

William G. Maney, formely connected with George Munce, of Batavia, has established himself in business as a plumbing and heating contractor at 13 State Street in that city. Among contracts already secured are those for installing heating systems in the new St. Jerome Hospital, the St. Joseph's Convent, and the Sacred Heart church parsonage, and a factory for T. E. Martin & Sons, all in Batavia.

Havens Plumbing & Heating Co., of Elmira, has been awarded plumbing and heating contracts in connection with three large buildings which are being erected for the Willis-Morrow Co., in that city. These contracts amount to $30,000. This company has just completed the installation of plumbing and heating systems in the Elmira Female College, a $10,000 contract. The Havens company also has on its books the plumbing contract on 35 new houses at Hammondsport for the Curtis Aeroplane Co., as well as several smaller contracts, covering the plumbing installations in new buildings for the Shepard Electric Crane & Hoist Co. at Montour Falls, N. Y.

New Jersey

Newark and Vicinity.

Herman Faul, or 419 Grove Street, Newark, will install the heating and plumbing work in a new residence on Girard Place, for the Aetna Realty Co.

Fred. Amend, of 52 Gray Street, Newark, has the contract for heating and plumbing work in two new dwellings in course of construction on Leo Place.

Edwin Sternkopf, of Newark, will do the plumbing in a new store and apartment building on Pacific Street.

W. J. Cross Co., of 157 Webster Avenue, Jersey City, has the contract for plumbing and heating work in the addition to the Eckerson Co.'s dairy building at Bay and Provost Streets.

Newman & Dangler, of Spring Lake, will do the plumbing work in a new $10,000 residence for M. P. Chamberlain.

Joseph Kelly, of East Orange, will do the plumbing and heating work in three new apartment buildings on Springdale Street, for Kelly-Ackerson Co.

L. J. Osterstock, 301 South Twentieth Street, Irvington, is doing the plumbing in a new shop building on South Eleventh Street, Newark, for Levy Bros. Co.

Tennessee

Nashville and Vicinity.

Kane & Murray, of Church Street, Nashville, report having received contracts for pumbing several residences and store houses. They have had a satisfactory fall and expect the new year to open with considerable new and remodeling work.

J. M. Gallagher, of Nashville, has moved his plumbing establishment from Commerce Street to Sixth Avenue. He recently secured contracts for installing plumbing systems in several schools.

The Standard Engineering Co., of Nashville, has several heating contracts around the city, including one at Fisk University.

The plumbing business of the late N. J. Jonte, on Fourth Avenue North, Nashville, is being carried on by his estate. The shop was one of the largest and best equipped and had one of the most commanding list of patrons in Nashville.

Wm. A. Roach, Church Street, Nashville, is active with residence and storehouse work, new and old, in different parts of the city.

H. B. Jordan, of Bridge Avenue, is doing the plumbing on several business structures in Nashville, and has some out-of-town work in Middle Tennessee. He says that the closing year, while dull much of the time, had its bright spots, and that there is enough work under plan for 1918 to afford some promise for the plumbers right at the start.

W. H. Grewar Co., of Church Street, corner of Third Avenue North, one of the pioneer plumbing and heating firms of Nashville, is doing the heating work on the Belvedere Apartments, some work on the Hurricane Hall, at Tullahoma, Tenn., and on the Belle Meade Apartments. The company has just finished the heating and ventilation work on the Cohn Apartment building.

Other Cities in the State.

J. W. Gowan is conducting a plumbing establishment at Paris, Tenn., and has recently secured several contracts there and in other Middle Tennessee towns.

Cronin, Baker & Tindall, of Memphis, have the contract for the plumbing on the addition to the Baptist Memorial Hospital in that city.

H. Smith Heating Co., of Memphis, has the contract for the steam heating job on the Memphis Police Station.

S. J. Veltman, plumbing contractor, of Paris, is doing the plumbing and hot water heating on a residence for Dr. G. L. Powers, State Dental Examiner. He also has the contract for the plumbing and steam heating on the Presbyterian Church at Paris.

Idaho

U. S. Senator J. H. Brady, of Pocatello, has purchased the Bannock Hotel, and will immediately remodel and improve the building to make it a modern hostelry. The plumbing system will be greatly extended, and more heating equipment installed.

The Administration building of the Lewiston State Normal School was completely destroyed by fire recently, with a loss of more than $100,000. Insurance of $92,200 was carried, and it is planned to rebuild the structure as soon as possible.

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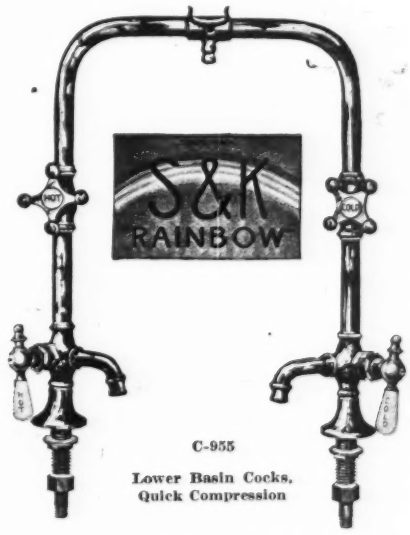

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Keeps basement dry, clean and sanitary. A positive safeguard, either wet or dry, against sewer gas and water.

Brass working parts submerged—works automatically by gravity.

Always works. Always satisfactory.

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Clean Boilers Steam Quickly

No exorbitant fuel bills — no kicks about insufficient heating when

Old Dan Boiler Compound

is on the job. It removes dirt, scale and sludge and cuts oil, leaving a sweet, clean boiler. Try a 5 gallon can.

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Eliminates Air, Promotes Circulation, Saves Fuel

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Montana

Plans have been completed for the Woodburn Building to be built in Wibaux, at a cost of $30,000. Structure will be two-stories, 30x100 feet, with basement. Modern heating and plumbing systems will be installed.

The Camas Hot Springs Health Resort, Helena, has been incorporated with a capital of $500,000 by Edward Donlan of Missoula, Rueben Wright and Charles G. Van Hook, all of Hot Springs. The company will remodel the old Flathead Springs Hotel and will build addition to provide for a large patronage. A large number of bathrooms will be installed, and new heating facilities provided.

Missoula Theater Company, Missoula, will construct a new $90,000 theater in that city, to seat 1,200 persons. The structure will also contain five stores. Modern plumbing, heating and ventilating systems will be installed.

Approximately $75,000 was spent in the little city of Bridger during 1917, in building operations. Practically all of the buildings are business blocks. Plumbing and heating contractors report a very busy summer and fall.

The city of Bozeman issued building permits totalling $45,000 during the month of November. The largest single structure was the building for the Gallatin Laundry Co., to cost $20,000. A number of residences were included in the permits, and the town is showing an unusually healthy and active building situation.

E. Broox Martin and E. B. Tipton, of Bozeman, have purchased a lot on Curtis Street, on which will be erected a modern apartment house to cost $50,000. The structure will be three stories and contain about thirty apartments. Each apartment will have a private bathroom.

Few permits for the construction of new buildings were issued during the latter part of the month of November in Butte. There were the usual permits for repairs and improvements which property owners were anxious to have completed before the real winter weather sets in, but there was a noticeable falling off in permits for new buildings.

Oregon

Portland and Vicinity.

Building permits to the total of $525,565 were issued for the month of November in the city of Portland, showing a big increase over October of this year, and also over November of a year ago. Permits for the previous month were $266,420 and for November, 1916, $252,095. A substantial betterment of business conditions is reflected in bank clearings statistics for the month. The bank clearings for November were the second largest on record for Portland. The city of Portland has at the present time the greatest industrial payroll ever known in its history, due to the wonderful momentum from the shipbuilding industry, which employs directly and indirectly between 13,000 and 14,000 men. It is expected that several thousand more will be employed in both steel and wood shipbuilding by the early part of 1918. Apartment houses and "for-rent" residences are completely filled, and there is an urgent need of additional modern houses for renting purposes. Sale of property for homes has been active,

indicating the prosperous condition of the working class in the city. Contractors have been busily engaged in new construction work, and plumbing and heating contractors report an exceptionally prosperous fall season.

Rockwood Sprinkler Co., Portland, secured the contract for the automatic sprinkler system to be installed in the two-story building under constructon at Park and Alder Streets for the Spalding Estate. This is the first building to be erected under the new building code, which permits mill construction buildings equipped with sprinkler systems in the district where only fireproof buildings were allowed previously.

A tariff increasing the rates of the Portland Central Heating plant in Portland from 25 cents per square foot of radiation to 51½ cents per year has been filed with the Public Service Commission. Ten days' notice was not given of the filing of the tariff, but the Commission may, if it desires, waive this requirement.

A. A. White, owner of the Hotel Oregon, Princeville, Ore., which was recently destroyed by fire with loss of $17,000, will rebuild at once.

It is reported that the city of Reedsport will experience a genuine building boom next spring and summer. It is expected that as soon as weather conditions permit, preparations will be started for building many residences.

Plans for proposed changes to be made in the Douglas County courthouse at Roseburg have been completed by Architect J. E. Tourtellotte, of Tourtellotte & Hummel, of Portland, and provide for addition of another floor. The heating and plumbing systems to be installed will cost $15,000.

W. O. Heckert, of Eugene, has received contract for remodeling the interior of the postoffice in Eugene. Work includes the extension and improvement of the heating system.

Washington

Seattle and Vicinity.

Figures compiled by the Seattle Department of Buildings show that during the month of November, alterations and additions to old buildings aggregated in value $107,995. That new building is active, is indicated by permits for an aggregate value of $393,000. This number includes three fireproof structures, one slow burning, seven ordinary masonry and 303 frame buildings begun during the month.

Norton & Spangler, White Building, Seattle, on a bid of $2,374, received the contract for plumbing and heating in Fire Station No. 36, Seattle.

The Grote-Rankin Co., occupying a 6-story building at 5th and Pike Streets, Seattle, plans to add 20,000 feet of floor space to their present quarters. The Sun Building, adjoining, has been leased, and will be remodeled and improved to meet the needs of the new owners.

The greatest activity in building has been noted at the three principal Puget Sound forts, Worden, Flagler and Casey, in preparing for modern housing of the Coast Artillery troops. Modern bungalows of the most permanent and up-to-date type are being built for the officers. Barracks for the men are supplied with shower and tub baths, and a constant supply of hot water. Hot water systems of the most approved type are being installed under the supervision of Lieut. L. P. Hornberger, constructing quartermaster for the U. S. Government.

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A Merry Christmas
and
Happy New Year

WOLVERINE BRASS WORKS
Grand Rapids, Mich. San Francisco, Calif.

The DUNHAM VAPOR HEATING SYSTEM

Conserves coal.
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DRAIN PIPE SOLVENT

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10,000 plumbers now use Blue Seal. Over 300 jobbers stock, sell and recommend it. If you haven't used it, this is your opportunity.

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keeps *last section* of radiator hot as well as the first.

Absolutely automatic.
Non-adjustable.
Expels all air and prevents its return.
Will not leak steam or water.
Made of highest quality steam metal and phosphor bronze. Will outlive the heating plant.

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Perfectly adjustable to any pitch from 50% to flat. Highest quality material. Highest quality of workmanship.

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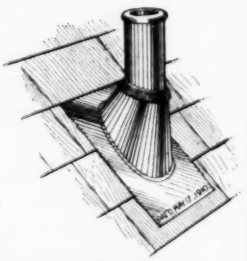

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The ORIGINAL Compound Lever Ball Cock, Elevated, Low-Down, Top and Bottom Supply. Tank Levers and Valves.

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BALTIMORE, MARYLAND

FOR lasting quality and true capacity use "KOVEN" Pure Iron, Double Row Riveted, Galvanized Range Boilers, or NACO Galvanized Range Boilers made of open hearth steel. These boilers may be bought of jobbers everywhere.

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50 CLIFF STREET NEW YORK

The Hurley-Mason Co., contractors for Camp Lewis, American Lake cantonment, near Tacoma, have delivered the camp over to the Government as completed. The contract was awarded to the concern on June 14th, and on September 6th the cantonment was ready for first quota of men. The cost of the camp has been between $5,000,000 and $6,000,000. The Construction Company, of Tacoma, has been organized to do all future construction work at the camp, under the direction of the Utilities Department. The company is composed of officials of the Hurley-Mason Co. Several additional buildings are now offered, including a repair shop, 196 ft. long and 30 ft. wide, cold storage plant, and several other small buildings, totalling a cost of $20,000.

William Wills, Crary Building, Seattle, has received the general contract for construction of a modern hotel building for the Pacific Coast Coal Company at Coal Creek, Wash. The structure will contain 33 rooms. Separate bids will be asked by the Contractor for plumbing and heating.

Architects Heath & Cove, of Tacoma, Wash., will call for bids immediately for the construction of the William Winlock Miller High School at Olympia, to cost $100,000. The structure will be two-stories and basement, of brick, and will contain thirty rooms.

Spokane and Vicinity.

While the aggregate value of building permits in Spokane for the year 1917 to date, is more than $300,000 ahead of the first eleven months of last year, the value of permits for November, 1917, fell below those of the same month last year. The total number of permits issued last month was 75, with valuation of $45,105, as compared with 79 permits for $134,385 in the same month last year. This year, to date, 1,031 building permits have been issued, with value of $1,861,975, as compared with 1,255 permits, with a total of $1,533,217 for the first eleven months of last year. During November, permits were issued for alterations in twenty-two residences.

Plans prepared by Architect Archibald G. Rigg, of Spokane, for the $80,000 infirmary at Edgecliff Tuberculosis Sanitarium, have been approved by the State Health office, and construction will begin in the near future. The structure will be of brick and reinforced concrete, fireproof, and will be equipped with modern plumbing and heating systems.

The Strand Theater Building, Spokane, was practically destroyed by fire, with a loss of $50,000. It is stated that the structure will be rebuilt.

The State Capitol Commission, at Olympia, has awarded to the Puget Sound Bridge & Dredging Co. of Seattle, contract for erection of the new Temple of Justice, on its bid of $245,800, with an agreement to furnish a bond to finish the structure within fifteen months. Henrikson & Co., Seattle, put in a bid of $245,587, but would not agree on a time to finish the work. Architects are now at work on plans for the interior and the contract will be let early in January.

The officials at the Puget Sound Navy Yard, Bremerton, have grown tired of waiting for city officials to handle the problem of housing the great increase in the working personnel of the naval station, and the Government has appointed a safety engineer and six assistants, to make a thorough canvass of living accommodations in the navy yard's town. A tremendous amount of work is being undertaken by the Government at its Puget Sound station, with a rapidly increasing number of workmen required to handle this work. Houses are becoming so scarce that is

impossible to accommodate a small proportion of the workmen and their families, and the problem is becoming exceptionally serious. Contractors and real estate men have built a large number of houses, but have been unable to keep up with the increasing demand. There are a number of small houses and bungalows now under way, and it is expected that the action of the Government will result in an even greater number being undertaken.

L. W. Hutton, of Spokane, has adopted the cottage plan for the Orphans' Home, which he proposes building at Pasadena Park, near Spokane, Plans are being prepared by Whitehouse & Price, architects, for six brick cottages, each two and a half stories, with accommodations for twenty children.

Warrack Construction Co., of Seattle, on a bid of $44,000, submitted the lowest general bid for the construction of the State School for Girls at Grand Mound, Wash. The following bids were submitted for plumbing and heating: Plumbing: (a) cottage No. 3 (b) addition to administration building, (c) power house; Dupar-Blythe Co. Seattle, (a) $11,554, (b) $1,267, (c) $481; Arnold Evans Co., Tacoma, (a) $10,977, (b) $998, (c) $446; Rautman Plumbing & Heating Co., Seattle, (a) $11,450, (b) $1,200, (c) $472; Ben Olson Co., Tacoma, (a) $10,987, (b) $1,194, (c) $520; A. Gehri & Co., Tacoma, (a) $9,817, (b) $1,020, (c) $260; Appling-Griggs Co., Tacoma, (a) $11,800, (b) $1,220, (c) $420; Rushlight & Hastorf, Portland, (a) $10,577, (b) $1,167, (c) $397; Coffee Plumbing Co., Tacoma, (a) $10,617, (b) $1,299, (c) $463. Heating: (a) central heating plant, (b) cottage No. 3, (c) addition to administration building, (d) power plant: A. Gehri & Co., (a) $57,800, (b) $4,400, (c) $2,100, (d) $390; Appling-Griggs Co., (a) $55,200, (b) $3,588, (c) $1,753, (d) $365; Coffee Plumbing Co., (a) $56,088, (b) $3,927, (c) $1,930, (d) $415; Rushlight & Hastorf, (a) $56,276, (b) $4,067, (c) $1,926 (d) $397; Dupar-Blythe & Co., (a) $56,741, (b) $4,210 (c) $1,977, (d) $439; Arnold-Evans Co., (a) $56,000, (b) $4,000; (c) $1,898, (d) $397; Rautman Plumbing & Heating Co., (a) $56,200, (b) $4,120, (c) $1,950, (d) $420. The contracts have not yet been awarded.

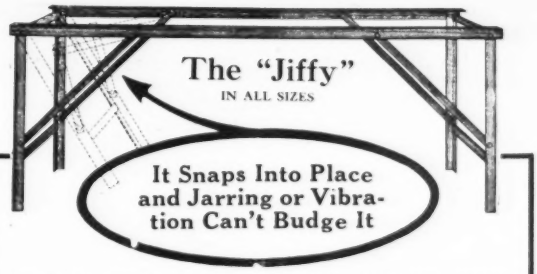
California

San Francisco and Vicinity.

While there is no great amount of business actually in sight, and some little hesitation on the part of property owners to make radical improvements at this time, the building trades find some little encouragement in the fact that, though the speculative element is now almost entirely wanting, there is a good deal of work coming in from actual need. Some men in the plumbing and heating trades are inclined to think that before long the elimination of so-called "non-essential" work will be largely recompensed by the growth of work that can clearly be classed as essential either to the winning of the war or to the carrying on of the ordinary operations of commonplace life and business.

A feature of the times is the growth in the building of loft and warehouse buildings in the warehouse and manufacturing sections of the town. The difficulties of railroad and ocean transportation are acting the part as a sort of protective tariff about San Francisco, and are leading to the growth of a lot of small manufacturing, thus stimulating the demand for buildings of the manufacturing type.

Figures will soon be called for the steam heating and



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THE FORD DONLEY CO., 1940 East 117th St., Cleveland, Ohio

The Boston Grease Trap

is pronounced the most efficient trap on the market, wherever it is in use.

Separates all grease from waste water and retains it so that pipes will not become clogged.

Special clean-out feature. Handhole is extra large, making it easy to remove grease.

Price within reach of all.

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Hot Water - Steam
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Embody Advanced Ideas

The Reading Heater & Supply Co., Inc.
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This Catalog contains interesting details on

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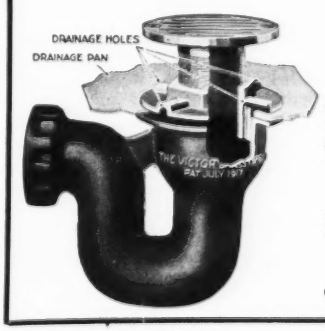

Double Drainage Shower Traps and Drains

Its four drainage holes cast in brass will not clog up from rust and corrosion. Perfect drainage always.

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The Fuller Ball You Can Depend Upon First, Last and Every Time

Made of best quality material. Famous for its lasting service.

Look for the trade-mark stamped on all our Fuller Balls. It assures you of getting the *right article* at the *right price*.

We Make a Complete Line of

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The Celebrated Bell Washers, Fuller Balls, Steam Valve Discs, and all kinds of small molded rubber goods.

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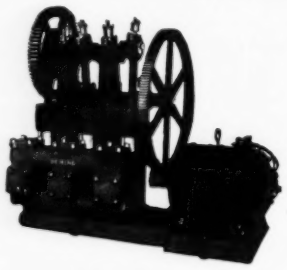

Fig. 50. Type "E" Drive.

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Triplex Power Pumps

Are made in many different styles and sizes with capacities from 300 gallons per hour to 130,000 gallons per hour. For operation by any power and for use in apartment houses, educational buildings, office buildings, country estates, etc. Our engineering department will be glad to submit their recommendations.

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GENERAL DISTRIBUTING HOUSES:

Henlon & Hubbell, Chicago. Harris Pump & Supply Co., Pittsburgh.
Root, Neal & Co., Buffalo, N. Y. Ralph B. Carter Co., New York City.

vacuum cleaning systems for a Roman Catholic Parochial residence on Filbert Street, near Powell.

M. C. Baker & Son, contractors and dealers in ventilating and electrical apparatus, have removed from their old location at 636 Market Street to new quarters at 688 Mission Street.

The San Francisco Federal Reserve Bank has appointed the P. J. Walker Company to superintend the construction of the proposed new Federal Reserve Bank building, to cost about $400,000.

The Building Committee of the San Francisco Board of Supervisors has decided to postpone the greater part of the city's school building program for some time, owing to the poor market for municipal bonds at this time. The city has on hand school bonds to the amount of $3,500,000 for the building of school houses, but, according to present plans only enough of these will be sold to erect two buildings.

Figures will soon be called for the various items included in the erection of a five-story and basement, reinforced, concrete loft building to be erected for A. B. Spreckels, at the corner of Spear and Harrison Streets, at a cost of about $200,000.

Other Cities in the State.

A plan is under way at Vallejo to have the city license fee for plumbers increased from $15 to $50 per year.

Work on the Washington school building at Sacramento, which has been suspended, owing to the lack of materials, is again in full swing. The structure is to be four stories high, to contain about forty rooms and an auditorium and to care for a thousand pupils.

The Union High School Board at Venice has called for bids for heating apparatus and other equipment for the proposed gymnasium for the high school.

The City Council of Los Angeles has passed an ordinance, amending and modifying the ordinance regulating the installation of automatic sprinkler systems in the down-town section of the city. As amended, the ordinance will leave the installation of automatic sprinkler systems largely in the hands of the fire commissioners.

Lyman Farwell and John B. Dawson are having plans drawn for a seven-story, reinforced concrete hotel building to be erected in the San Pedro section of Los Angeles The building will be 50x120 feet in ground dimensions and will be the highest structure in the harbor section of the city.

Alexander Brown has let contracts for the construction of a hotel at Walnut Grove to cost about $70,000, and to be completed by July 1, 1918.

Work has been started on the proposed new $80,000 high school building, at Oroville, which is due to be completed by July 15, 1918.

Plans are now being drawn for the proposed new Fort Bragg hotel, at Fort Bragg, to cost in the neighborhood of $50,000.

G. W. Stewart has secured a building permit for the construction of a theater building at 1318 Park Street, Alameda, to have a seating capacity of 1,600.

Arizona

The building of the proposed mining town of Verde, in the Verde Valley near here, will involve a good deal of work of interest to plumbing and pipe men. The work will include a large hotel, several apartment houses and a large number of residences, together with the necessary plumbing, sewering, water works, etc.

Ohio

Cleveland and Vicinity.

Master plumbers licenses are now being renewed at the city hall. David H. Roberts is chairman on the municipal plumbing board.

Nominees for the offices of the Master Plumbers' Association for the coming year were named at a meeting of the organization on Monday, December 18th. The list of nominees has not been made public, as it may not be final. On account of the holidays the last December meeting will not be held. The next meeting, January 8th, will be the annual meeting, at which officers will be elected. At the same time delegates to the convention of the Ohio State Association of Master Plumbers, to be held at Dayton, February 5th, 6th and 7th, will be named.

Eb. Ellen, of Cleveland, secretary-treasurer of the Ohio Master Plumbers' Association and secretary of the Cleveland Master Plumbers' Association, who has been seriously ill for several months, is reported to be on the road to recovery. Mr. Ellen's many friends in all parts of the country will be glad to receive this good news.

The Poplowsky Plumbing Co., of 2243 East 40th Street, has been awarded the contract for installing plumbing in the new office building of the Oak Investment Co. at East 11th Street and Walnut Avenue.

Warden & Leese, of 1905 Prospect Avenue, have closed the plumbing contract, and the Roevner Heating Co., 1808 East 22nd Street, the heating contract on the new $150,000 addition to the Rice public school, Buckeye Road and 116th Street. The heating plans were made by R. J. Mayer, associated with Walter R. McCormack, architect for the board of education. Mr. Mayer also has just completed heating plans for the North Doan School addition, a $110,000 structure.

R. E. Greene & Son, of 5425 Detroit Avenue, have the contract for installing a heating system in a $12,000 residence and garage at 11307 Harborview Avenue, for W. M. Williams.

The Spitz Plumbing Co., 9114 Blaine Avenue, will do the plumbing work on three residences for the Spitz Realty Co.

J. Fieg, 3787 West 25th Street, has the plumbing contract on a $4,500 residence at 10309 Almira Avenue.

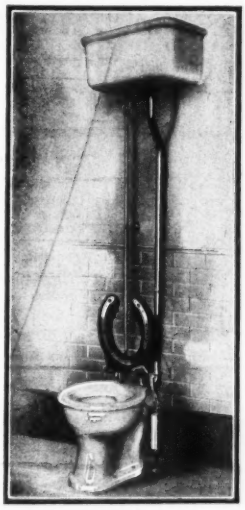
The Chappell Warren Co., of 1384 East Sixth Street, has been awarded the contract for the installation of a heating system in the machine shop at East 28th Street and Kelley Avenue. The building will cost $20,000.

Warden & Lesse were represented in a special section of the Cleveland Plain Dealer on the occasion of the opening of the Winton Hotel, Cleveland's new $3,000,000 hostelry, for which this firm installed the plumbing system.

Al Schnitzer, plumbing contractor, and Charles Esterly, of the Buckeye Furnace Co., were among the six directors of the Building Contractors' Exchange, elected at a meeting last week. The organization started last May with 14 members. It now numbers 135 members, and efforts are being made to raise this figure to 200.

The newest member of the Cleveland Master Plumbers' Association is the Bell Plumbing Co., of 10017 Euclid Avenue. G. S. Bell, former manager of the plumbing department of the Sanitation Co., 5726 Euclid Avenue, is proprietor of the new company.

The annual banquet of the Master Plumbers' Association will be held Tuesday evening, January 15th. Arrangements are now being made by the entertainment



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The Main Feature

The MAXCO Automatic Flushing Device

has only one part —is located above water line, and float is arranged to insure complete syphonage.

Most positive and reliable self-operating closet made.

Try the MAXCO on your next school or factory job — you'll be more than pleased

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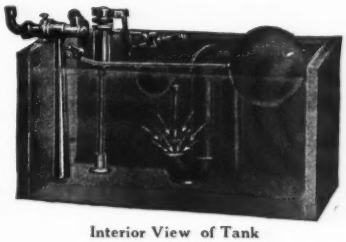

Interior View of Tank

MOUAT VAPOR HEAT

Begins Economy

The Mouat Graduating Vapor System means economy for the steamfitter and the buyer.

VAPOR MOUAT HEAT

Time is money and you can't afford to waste it trying to make a poor system work. When you install the Mouat Graduating Vapor System your job is completed and you can forget about it except for the business it brings you, for every Mouat owner is a Mouat booster.

Write for dealer's proposition.

The Mouat-Squires Co.
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Dole PACKLESS GRADUATED RADIATOR VALVE

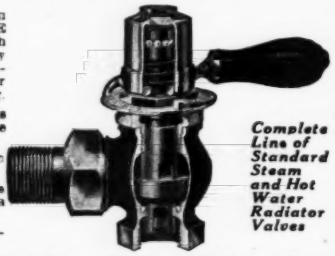
Embodies a new and exclusive DOLE principle by which you can have every degree of opening required in vacuum or vapor steam heating.

This Adjustment is easily made while the steam is on.

Nothing like it on the market.

Furnished with the DOLE without extra cost.

Write for new circulars.



Complete Line of Standard Steam and Hot Water Radiator Valves

THE DOLE VALVE CO. 208 No. Fifth Ave. Chicago

PAUL Systems give the Best Service

Private Water Systems
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For Country Homes, City Residences, Country Clubs, Summer Cottages, Factories and Private and Public Institutions, For the Factory or Private or Public Garage

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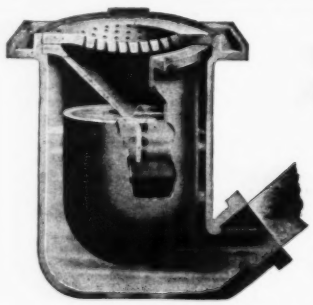
MAIN OFFICE AND FACTORY
Dept. 14 Fort Wayne, Indiana.



The Original DONOVAN FLOOR DRAIN AND SAND ARRESTER

Note Interior Removable Chamber

For Sale by All Dealers

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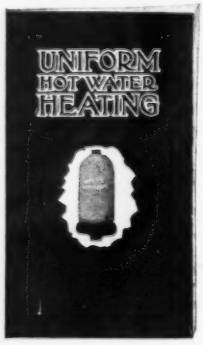
105 Washington St., Boston Send for Circular



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It tells you all about the

Ball Seal Generator

for Hot Water Heating.

This generator increases circulation and radiation. Prevents sluggish, water-logged conditions. Reduces fuel cost. Operates without noise. No attention needed.

Just what you want for that next job.

The Ball Seal Generator Co.
Easton, Pa.

committee, consisting of H. W. Eckhardt, chairman; A. J. Penote, P. McDermott, Lee F. Perry and G. Rowe.

George J. Potter, of 4216 East 131st Street, has been awarded the plumbing contract for a four suite, $8,000 apartment building at 3467 East 117th Street.

It is announced that the plumbing department at the City Hall, of which David H. Roberts is chairman, is actively enforcing the city plumbing code, making it unpleasant for violators.

The Master Plumbers' Association is laying plans for a series of blackboard talks by experts dealing with various phases of the plumbing business, as a part of the educational work of the organization.

Indiana

Indianapolis and Vicinity.

The Cotton-Wiebke Co., of 1720 East Tenth Street, Indianapolis, has been awarded the contract to install the plumbing in a new $5,000 residence that is being erected at 137 East Forty-fourth Street for the Burns Realty Co. The heating system will be installed by the Home Stove Co., Kentucky Avenue and Henry Street.

James A. Kreglo, of 2118 East Tenth Street, Indianapolis, has received the contract to make extensive alterations in the plumbing in W. H. Helvin's two-story apartment building at 1716 North Illinois Street.

Foley Bros., of 111 East Ohio Street, Indianapolis, have been awarded the contract to install plumbing and heating systems in a new residence at Twenty-sixth Street and Ethel Avenue.

Other Cities in the State.

The Columbia Heating and Plumbing Co., of Columbia, was the successful bidder for the plumbing and heating contracts on the new store and office building that is to be erected in that city by the Crosswhite Bakery Co.

Werkhoff & Layton, of Lafayette, have been awarded the contract to remodel the plumbing and heating systems in the Motsinger Device Co.'s factory at Ferry and Twenty-seventh Streets.

Harry Shreiner, a plumbing contractor at Elkhart, had a narrow escape from death one day last week when his Ford motor truck was struck by a street car at Jefferson and Second Streets in that city. He failed to see the car approaching and heard no warning. He was thrown to the pavement but suffered only a few minor bruises on his hands and knees.

Schwegeman & Witte, of Fort Wayne, have just completed the installation of a new heating plant in the county jail at Columbia City. The county commissioners have accepted the work and have authorized the payment of the contract, which was $2,028.

W. H. Burk, of South Bend, has been awarded the contract for installing a hot water tank, and make other additions to the heating system in the county tuberculosis hospital at South Bend. The contract was awarded by the county commissioners.

Prox & Burget, of 118 North Eighth Street, Terre Haute, have just been awarded the contract to install the plumbing and heating systems in the new motion picture theater that is to be erected at Eighth Street and Wabash Avenue by the Terre Haute Theater Co. The building will cost approximately $85,000 and will be one of the finest in the state.

The Maloney Plumbing Co., of Gary, will install the plumbing and heating in the new $12,000 clubhouse that is to be erected at Connecticut and Ninth Streets for the

Gary Hebrew Education Alliance. Work will be started soon after the first of the year.

H. H. Highlands, of Gary, has received the contract to install the plumbing and heating in two new flat buildings that are to be erected there for C. M. Iverson. Each building will cost about $12,000. Mr. Highlands also has the contract to install plumbing in Randolph Mohr's new $8,000 residence.

George Austgen, of 833 Alice Street, Hammond, has been awarded the contract to install the plumbing in the new $8,000 residence that is to be erected at Glendale Park for J. H. Meya, Hammond.

William Gamso, the well-known plumber of Lafayette, has joined the page rank of the K. of P.

GOVERNMENT CONTRACTS TO BE AWARDED.

Supervising Architect James A. Wetmore, of the Treasury Department, Washington, D. C., will receive sealed proposals for government work as follows:

Until 3 p. m., January 7, 1918, for the construction, including plumbing and heating, of the United States postoffice at Shawnee, Okla.

Until 3 p. m., January 14, 1918, for the construction, including plumbing and heating, of the United States postoffice at Owego, N. Y.

Until 3 p. m., January 15, 1918, for the construction, including plumbing and heating, of the United States postoffice at Eldorado, Kan.

Until 3 p. m., January 28, 1917, for the construction, including plumbing and heating, of the United States postoffice at Sunbury, Pa.

Drawings and specifications may be obtained from the custodians of the various sites or from the office of the Supervising Architect in Washington.

WAR SAVINGS.

"War Savings Stamps mark an epoch in our national life."—Secretary of the Treasury McAdoo.

Many a successful business man has said that the saving of his first dollar was the most important single act of his life; that it marked the beginning of a habit and a course of conduct to which he attributed his success.

Something very analogous to this, it is believed, is going to be the effect on the American Nation of the War Savings campaign. Not only are millions of individual citizens going to begin to save, but this habit of economy and saving is going to be a collective movement, a movement not of individuals alone but of the nation.

The habit of saving formed now has a deeper incentive than ordinary. We are saving now not alone for selfish reasons, we are saving now from patriotism, saving not alone for ourselves but for our country. The combination of patriotism and thrift is, indeed, going to make the War Savings campaign an epoch in our national life. It is not only going to be a thing of tremendous benefit to millions of citizens, it is going to be a thing of tremendous advantage to the nation as a whole, and affect our whole national life. It marks the beginning of a new era in American life, an era of economy, good sense, and patriotism.

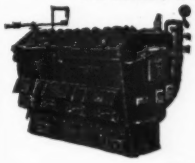
Albany, Ala.—Hal Mullen has purchased A. P. Smith & Sons' plumbing business and will combine it with his present business at 413 Second Avenue.

Richfield, Utah.—The Central Plumbing & Heating Co., of this town, has filed a petition in bankruptcy, scheduling liabilities amounting to $7,299.82 and assets of $3,665.04.

Economical Heating—A sufficient reason why you should install

PIERCE DOWN DRAFT HEATING BOILERS

For Steam, Water, Vapor, Vacuum, Heating



There are other reasons, too:

1. Magazine Feed.
2. Down Draft.
3. Smoke Consuming.
4. 25% Fuel Expense Saved.
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6. All Cast Iron.

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Saves Figuring

That means saving time and time means money.

The Alexander Table of 45 degree Offset Measurements, enables you to tell at a glance any measurement desired from ⅛ inch to 21 feet, increasing by eighths.

Convenient. Accurate. Soon saves its cost.

Size, 3½x5 inches. Bound in leather.

Also in chart form 2 ft. x 2ft
Price $1.00 Each

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Use Only the
ORIGINAL
Double Drainage Drains

The Name Protects You

Look for "JOSAM" on Every Drain

Made by
JOSAM MFG. CO.
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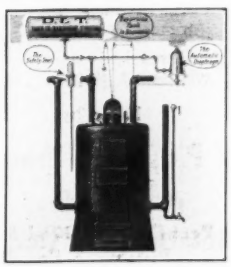
D & T Tank-in-Basement System



Increases circulation. Controls dampers automatically. No outside power needed.

Cheapest, most efficient, complete hot water heating system on the market.

Guaranteed for five years.

Write for new Booklet

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1911-13 Pine Street
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Made As They Should Be

Pfau White Seats are constructed with a long dowel in each tongued and grooved joint, making a joint which we guarantee against splitting. Every Pfau White Seat is equipped with the long white rubber bumpers, which were originated by The Pfau Manufacturing Company. The hinges are of highest grade nickel-plated cast brass, or can be finished with the celebrated Pfau White, to match the woodwork.

Ask Your Jobber Today

THE PFAU MFG. CO.

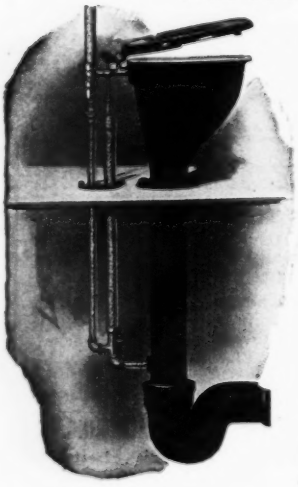
Cincinnati **Ohio**

ORIGINALITY---

The Main Feature

The PITTSBURGH No. 4

was the first Frost-Proof Closet on the market with a valve accessible and removable above the floor. It still remains the leader in its field.



Valve and parts are made of best Red Brass in heavy pattern—substantial and durable.

Straight Back Enameled Rim Hopper.

No stuffing boxes.

The best frost-proof closet money can buy, at a price that warrants its use on any job.

Furnished with or without soil pipe.

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Pittsburgh, Pa.

REVIEW OF BUSINESS CONDITIONS.

(Continued from Page 555.)

The attitude of the Government in purchasing direct from the manufacturers will possibly restrict the jobbers' business from this direction. There will be a great retrenchment, and we all must prepare to meet conditions as they exist, which look none too favorable for the plumbing supply business for the coming year.

Our Seattle Correspondent.

Seattle master plumbers and heating engineers during the year now ending did less work than in 1916 and made more money. This statement sounds the way whale steak tastes, still we have the word of prominent men of the trade in the Queen City of the West for it. The answer to this paradox is quite simple, however. Better prices were received, and in spite of the increased cost of both materials and labor, Seattle plumbing and heating men have a nice profit for the year's work in their pockets or on their bank balances.

T. Josenhans, superintendent of buildings, Seattle, reports that during the year 1917, ending November 30th, 7,222 permits for buildings were issued, with an estimated value of $6,169,260, as compared with 7,987 permits, with an estimated value of $7,859,399, for the year 1916, a decrease in estimated value of $1,690,139. Superintendent Josenhans' report also recites that the $6,169,260 expended in building during 1917 were applied as follows: Alterations and additions, $1,447,310; moved and demolished, $25,195; fireproof, $458,135; semi-fireproof, $1,326,450; frame buildings, $3,357,460. The buildings erected during 1917 were segregated as to occupancy as follows: Warehouses, factories, docks, wholesale buildings and public garages, $2,079,725; churches, theaters, hospitals, municipal buildings, $273,500; office and retail store buildings, $377,875; hotels, flats, apartments and lodging houses, $753,300; detached residences, $1,464,030. In passing it might be well to mention that during the year 1916 permits were issued for detached residences with an estimated value of $1,479,605. Master plumbers, who specialize in residence work of the five or six-fixture type, experienced a comparatively satisfactory year, because the residence building did not decrease to any noticeable extent. Estimated value of miscellaneous outbuildings totaled $193,615.

To the Seattle Master Plumbers and Heating Engineers' Association is due much of the credit for the profits of the members of the association for the year's work. The association during the past twelve months has done much to encourage co-operation among its members and towards the elimination of disastrous competition, which threatened to put a "for rent" sign on many of Seattle's shops, both large and small. At the regular weekly meetings of the association, "overhead" is shaken well and taken before, during and after the sessions. Consequently, the members, being so filled with the idea of figuring "overhead" in with the rest of their bid, did not fail to do this very thing when they handed in their figures, with the result before mentioned, namely, satisfactory bank balances.

The Seattle Master Plumbers and Heating Engineers' Association has a committee known as the Betterment Committee, and this committee, according to mmbers of the organization, is the real article. Its aim is co-operation among members of the association, adjudicating troubles of its members with each other and with building owners, besides suggesting, advising and teaching, all to the end that the association and its members may make progress and prosper. The committee is composed of: E. H. Norton, of Norton & Spangler, plumbing, heating

and ventilating engineers, White Building; F. E. Rautman, of the Rautman Plumbing & Heating Co., 118 King Street, and Claude Eckart, of the Eckart Plumbing & Heating Co., 1614 Third Avenue. These three men have labored hard during the past year and their efforts have not been in vain, because co-operation among the members has been secured. The association has a membership of 47, representing that number of shops. This number does not include all the plumbing and heating establishments in Seattle, but all the larger down-town establishments. The officers of the association are: C. J. Sullivan, of Sullivan Bros., 518 Olive Street, president; J. H. Stack, of J. H. Stack Co., 106 Jackson Street, vice-president; J. J. Ward, of Wenzler & Ward, 2705 First Avenue, secretary-treasurer.

During the past year the association held three first-class banquets which stand out distinctly from the other social functions planned and executed by the organization. These banquets were held at the Seattle Athletic Club. The first was in honor of members of the state association present in Seattle at the annual convention, May 17th to 20th; the second in honor of Tacoma master plumbers who paid the Seattle association a visit, and the third a mixer which gave the Seattle members of the association a chance to swap boosts and knocks and " Did 'ja ever hear that 'un 'bout," etc.

Seattle men of the trade, as a whole, believe next year is going to be a far busier and better year than the past one. There is plenty of money in circulation, and they feel confident that a considerable portion of it will be spent for new buildings, something Seattle is in dire need of at this time. Rental agencies in Seattle report there is not a vacant house in the city; apartment houses have a long waiting list, and the hotels cannot nearly accommodate the city's visitors, particularly the week-end visitors. This congestion is due, primarily, to the increased population resulting from the tremendous shipyard activities and the proximity of the government cantonments at American Lake (Camp Lewis) Naval Station University of Washington Campus, Bremerton Naval Station and the Puget Sound Coast Defenses, Forts Flagler, Casey and Worden. The Saturday and Sunday visitors from these cantonments number far into the thousands, and all demand accommodation, food, shelter and amusement.

Men of the trade argue that Seattle's increasing population, visitors and tourists must be provided for immediately, and that consequently much building will naturally result. It is said that there is an organized movement on foot among architects and general contractors, urging prospective builders to build now, maintaining that prices of materials and labor will not be any cheaper for years to come. The master plumbers, individually, are arguing along this line among their clientele, but no organized effort has been made to date. Several of the larger establishments have stated that they would be glad to co-operate in spreading this propaganda.

Herewith follow the opinions of some of the larger plumbing and heating establishments in the city of Seattle regarding the activities in the trade during the past year. It is believed that these opinions will give the reader a clear idea of the status of the trade in Seattle:

A. E. Ayers, vice-president of the Rautman Plumbing & Heating Co., 118 King Street, states: "Business was much better than last year. We did less work, but received far better prices, which accounts for a nice balance on the right side of the ledger, and that is what

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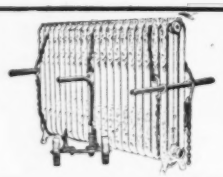
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counts after all. Materials were higher, but we took that item into consideration when submitting figures. Recently a slight decrease in prices of materials has been noted. The prospect for 1918 looks good to us. Seattle will have to build to shelter its constantly increasing population." At the present time the Rautman company is installing plumbing and heating in the plant of the Linde Air Products Co., in Seattle, a $16,000 job, and heating and plumbing in the Boeing Airplane Co.'s plant, in Seattle, an $18,000 job. This concern also recently completed the instalation of a heating system in a logging camp train, consisting of bunk houses, cook house, library, offices, etc., for the Merril-Ring Logging Co., at present operating in Snohomish County.

Rustad Heating & Plumbing Co., 315 Second Avenue, South: "We did not do any more work than last year, because of better prices, however, we made more money. The outlook for 1918 is promising." This company specializes in remodeling, repairing and alterations, and does considerable new work—as for instance, the plumbing and heating in the Seattle Baking Co.'s Building, recently completed, at a cost of approximately $6,000.

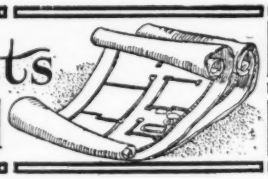
D. H. King, 214 Columbia Street: "We didn't do nearly as much business in 1917, as we did the year previous, but have a nice profit to show for our work. Better prices is the answer. The high prices of materials caused all of us considerable concern, but we held up our heads and will continue business 'as usual.' Our greatest trouble was in securing capable mechanics and competing with the shipyards for this class of labor. The mechanics seem to prefer shipyard employment, although we were paying at least $1 a day more for the same class of work. It is almost impossible at this time to get steamfitters, and our plumbers are doing this work. The coming year will be good, in spite of the war and high prices." The largest job completed by D. H. King, during the past year, was the Political Science Building, for the University of Washington. This job called for heating and ventilating and entailed the expenditure of $20,000.

E. H. Norton, of Norton & Spangler, White Building, said: "We did less business, but made more money this year. Better prices offset the increased cost of materials. I believe this expresses the opinion of practically every member of our association." Mr. Norton recently returned from the American Lake Cantonment, Camp Lewis, near Tacoma, where he superintended the installation of 140 heating plants in the hospitals, officers' quarters and other buildings for the government. The firm of Norton & Spangler recently completed the installation of plumbing in the West Seattle High School, a $30,000 job.

W. F. Eckart, of Eckart Plumbing & Heating Co., 1614 Third Avenue, in commenting on business for the past year, said: "We were fortunate in securing many nice contracts for which we realized a satisfactory profit. We did about the same amount of work as last year, but received much better prices. Overhead was a little higher, but everything considered, we are well satisfied." Recently the government wanted 600 fixtures installed in the new cantonment buildings under erection at Forts Flagler, Casey and Worden. The government wanted the work done in thirty days, so it asked the Eckart Plumbing & Heating Co. to do the job.

Allentown, Pa.—C. R. Young and John F. Kuhns have formed a partnership under the name of Young & Kuhns and have purchased the plumbing business of Haines, Weil & Co., at 21 South Sixth Street. Mr. Young was formerly located at 522 Walnut Street and he will move that business to the new location.

Contracts Awarded



Cincinnati, O.—Frank Niesen will install plumbing in a new public comfort station at Reading, O.

Hibbing, Minn.—Schirmer Bros. have secured the contract for the installation of modern heating in the new detention hospital. The contract amounts to $5,475.

Wernersville, Pa.—L. E. Ruth has secured the contract for the installation of heating systems in the Womelsdorf Lutheran Church, the Sinking Spring Garage and in J. H. Witter's residence at Newmanstown.

Marquette, Mich.—Swanson Bros. have secured the contract for the remodeling of the plumbing and heating systems in the Odd Fellows' Building, which is being converted into a motion picture theater.

Sioux Falls, S. D.—The Sanitary Plumbing & Heating Co. has secured the contract for the installation of plumbing systems in the Moe Hospital, the Sioux Falls National Bank Building and the new Cathedral. These three contracts amount to $100,967.

Akron, O.—The Bartley-O'Neil Co. has secured the contract for the installation of modern plumbing in the new East High School at Martha Avenue. The contract amounts to $12,544. Columbus Heating & Ventilating Co., of Columbus, will install the heating and ventilating systems for $21,500.

Louisville, Ky.—F. A. Clegg & Co., 110-112 South First Street, have recently secured contracts for installing smokeless boilers in the Coker Apartment Building and in Judge Alex Humphrey's residence. This concern will also install drying coils in the plant of the Ohio Falls Dye & Finishing Works.

Obituary

George Lechner.

George Lechner, a contracting plumber of Danville, Pa., died recently at his home in that city.

Frank J. Boyle.

Frank J. Boyle, formerly engaged in the plumbing business at Summithill, Pa., died recently at his home in Philadelphia.

R. M. Masters.

R. M. Masters, engaged in the plumbing business at Charleston, S. C., for more than 30 years, died at his home in that city on Thursday morning, December 13th, in his sixtieth year. Four sons and two daughters survive him.

James Trainor.

James Trainor, who had been engaged in the plumbing business at Baltimore, Md., nearly a quarter of a century, died recently at his home in that city from pneumonia, in his 52nd year. Mr. Trainor was born in County Monahan, Ireland, and came to Baltimore about 35 years ago, where he learned the plumbing trade. He was a past-president of the Master Plumbers' Association of Baltimore and a member of the Knights of Columbus. His wife and two sons survive him.

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to the Trade
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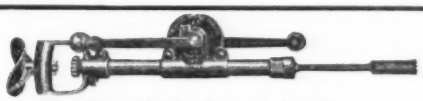

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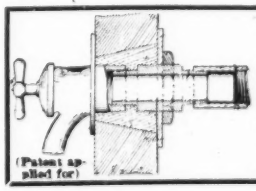

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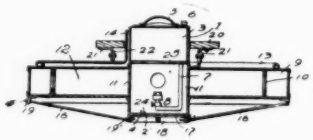
Manufacturers of Plumbing and Heating Goods Use

DOMESTIC ENGINEERING

Patents

Plumbing Department.

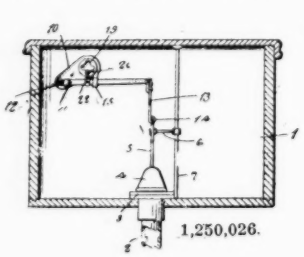
1,249,343. Water Heating Device. Albertus Dalton, Farmington, Ill. In a device of the class described the combination of a vertically extending sleeve member having the lower ends thereof closed, a fuel receptacle formed in the upper end of said sleeve, a heating chamber, said sleeve having openings therein adjacent the heating chamber, a fuel conveying pipe having a burner on the end thereof extending from the fuel receptacle to the heating chamber, a circular heat retaining chamber having a plurality of openings therein, means associated with said openings to convey heat to the uppermost portions of the device, radially extending heat conduits con-



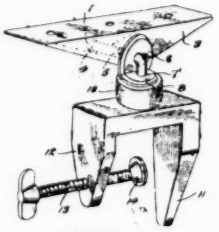
1,249,343.

necting the said apertures and the circular heat retaining chamber, and a float member adjustably connected to the radially extending heat conduits for a purpose specified.

1,250,026. Closet Tank Flush Lever. George A. Saal, Youngstown, O. A device of the character set forth comprising a cylindrical supporting member, a plate carried by said member, a lever pivoted to said plate, means for connecting the lever to a valve, an operating rod journaled in the supporting member, a trammel wheel formed on said operating rod, a roller carried by said trammel wheel, means for connecting the roller to the lever to rock said lever upon its pivot to unseat the valve.



1,250,026.

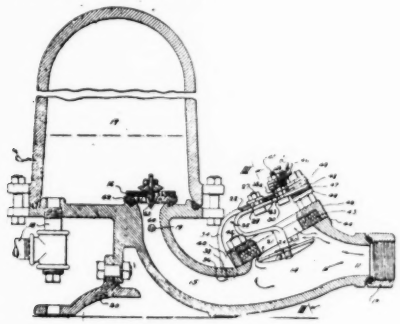


1,249,402.

1,249,402. Wash Board Clamp. Julia M. Hovey, Chicago, Ill. The combination with a laundry tub, of means for securing a wash board thereto, said means comprising attaching plates each provided with spaced ears having alined openings therein, and adapted to be secured to the wash board, right angularly disposed inverted U-shaped clamping members adapted to be secured to the laundry tub, L-shaped members each having one of their arms swiveled within said openings and the other arm swiveled within the right angularly disposed inverted U-shaped clamping members, whereby said clamping members may be rotatably adjusted to pivotally mount the wash board upon tubs of various shapes.

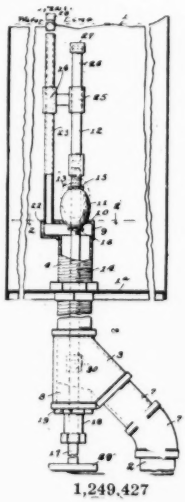
1,249,462. Hydraulic Ram. Lars Gustaf Nilson, Hoboken, N. J. A hydraulic ram including in combination, a pressure chamber, a duct conveying water to the same,

an overflow passage for said duct, a valve controlling said passage, a lever for said valve, a housing for the valve's seat to which said lever is pivoted, members extending up from said housing opposite to the point of attachment of the lever, and a resilient element adjustable on said members transversely to the path of movement of the lever disposed transversely across the path of said connection, and means for adjusting said member to predetermine the travel of the valve.



1,249,462

1,249,427. Water Tank Cut Off. Eugene L. Law, Lubbock, Texas. The herein-described device for controlling the flow of water from an elevated tank having in combination the stand pipe 2 for delivering the water at predetermined points near the ground, a discharge pipe extending through the bottom of the tank and communicating with the stand pipe, a chamber cap 9 secured to the upper end of the discharge pipe and having in its top a valve seat, a vent pipe secured to the said cap and communicating with the chamber therein, a longitudinally movable valve carrier 12 disposed centrally of the compressible valve and secured adjustably thereto and extending continuously from points above the valve to points relatively near the ground, a slide guide for the valve carrier secured to the vent tube above the valve, and a guide bearing for the lower end of the valve carrier situated at the lower end of the discharge pipe.



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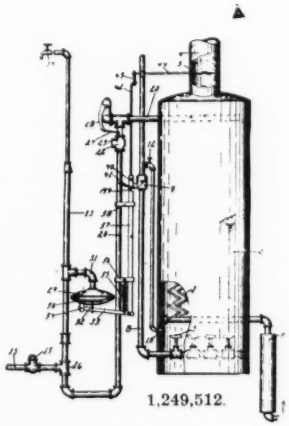

1,249,512.

1,249,512. Water Pumping and Heating Apparatus. Charles D. Saxton, Kalamazoo, Mich. In a structure of the class described, the combination with a steam generating boiler including a casing provided with a discharge flue, a damper for said flue, a connection for delivering water under pressure to said boiler, said connection hav-

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STEM SUPPORT

Has raised seat, Vim leather washer on cast brass disc fastened firmly to extra heavy stem guided above and below valve seat. Small float holding hinged finger against stem, so when disc is raised, finger engages integral flange on stem, holding it until tank empties. This permits float to drop and valve to reseat.

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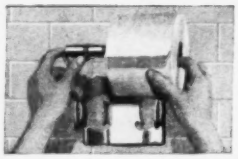

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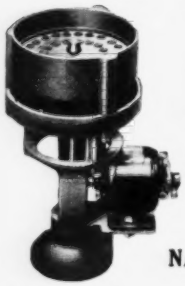

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Semi-Finished, Polished aluminum wheel Style N.

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STYLE N — Both shown in catalog D — STYLE O

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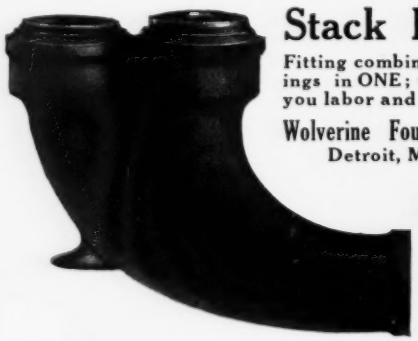


Stack Base

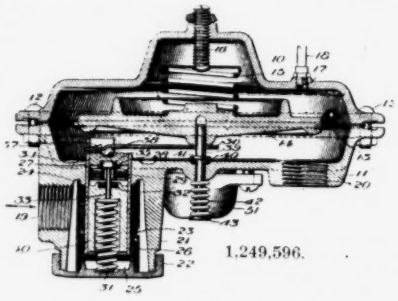
Fitting combines 4 fittings in ONE; will save you labor and lead.

Wolverine Foundry Co.
Detroit, Mich.

Mfrs. of Iron Closet Bends, Boiler Stands, Vent Caps, Cesspools, Laundry Tub Legs, Sink Brackets, Drive Ferrules Cleanouts, etc.

ing a back pressure drum adajcent said boiler, a discharge pipe for said boiler, a valve for said boiler discharge pipe, a thermostat disposed in said discharged pipe in front of said valve and operatively connected thereto so that the valve is opened by said thermostat when the steam within the boiler discharge pipe reaches a predetermined temperature, a delivery pipe provided with a draw-off cock, an ejector disposed between said delivery pipe and said boiler discharge pipe, a water supply pipe connected to said ejector, said supply pipe being provided with a return check valve, a pressure actuated member operatively connected to said delivery pipe, a fuel supply valve, a heating burner for said boiler, and operating connections for said pressure actuated member to said gas supply valve and damper.

1,249,596. Fluid Pressure Regulator. Arthur W. Cash, Decatur, Ill., assignor to H. Mueller Mfg. Co., a corporation of Illinois. In a fluid pressure regulator, the combination with a diaphragm casing having an inlet and an outlet, of a diaphragm therein, a valve chamber integral with and depending from said diaphragm casing, a valve casing within said chamber and spaced from the wall thereof, a double valve seat in said valve casing having a port there-

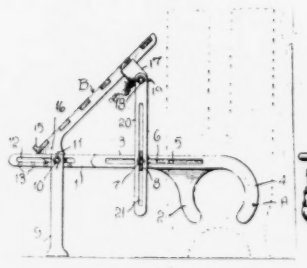


1,249,596.

through, a regulating valve on one side of said valve seat, a cut-off valve on the opposite side of said valve seat, a spring in said valve casing normally urging said regulating valve to its seat, means connecting said valves to insure simultaneous movement, and means operated by said diaphragm to actuate said valves.

Heating Department.

1,249,340. Foot Rest for Radiators. Oliver Frank Woolley Cromwell, New York, N. Y. A foot rest for radiators, including clamps designed for detachable connection to portions of a radiator and embodying longitudinally slotted bars, set screws mounted in the slots of said bars, legs pivotally connected to the said screws, an



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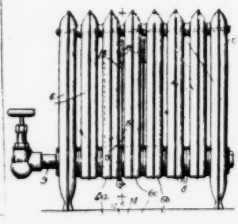

1,249,432.

angularly adjustable foot supporting plate provided with heel lugs connected to said screws whereby the tightening of the screws will hold the legs and the adjacent portion, braces pivotally connected to the foot supporting plate in advance of said set screws, and other set screws